Statement
of the
Tanana Chiefs Conference, Inc.

on

Further Exploration and Oil Development
in the 1002 Area of the
Arctic National Wildlife Refuge

to the

United States Senate
Energy and National Resources
Subcommittee on Public Lands and Reserved Water

June, 1987

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The Tanana Chiefs Conference is a regional Native nonprofit organization representing 43 Athabascan Indian communities in Interior Alaska. Among the villages we represent are Arctic Village and Venetie, communities that are heavily dependent, economically and nutritionally, upon the Porcupine caribou herd. We represent several other villages dependent upon that herd to a lesser extent. Tanana Chiefs appreciates the opportunity to comment on the further exploration and development in the 1002 area of the Arctic National Wildlife Refuge at this time.

The people in Arctic Village and Venetie are opposed to further exploration and development on the coastal plain of the refuge. The people in these villages feel certain that oil development will disrupt the Porcupine Caribou Herd in distribution and population significantly. The final resource assessment report itself concludes that major effects on the porcupine herd could result if the entire 1002 area were leased and developed. The Porcupine Caribou are the central food source for these subsistence based villages. There are no other local food sources to take the place of the caribou. Neither the draft nor the final coastal plain resource assessment clearly outline how critical the Porcupine Caribou are to the existence of those villages. As an environment impact statement, it fails to analyze the potential socioeconomic characteristics in Arctic Village and Venetie that may be significantly affected by the proposed action. The National Environmental Policy Act requires an analysis of the human environment impacted by major Federal actions. The potential impacts on Arctic Village and Venetie must be assessed in much greater detail.

Hearings were not held in these villages to illustrate the impacts that oil development could have on those villages. Section 810 of the Alaska National Interest Lands Act (ANILCA) calls for hearings should a determination of significant restriction on subsistence activity be made. However, section 810 only applies to Federal agencies and will not provide

protections if hearings are carried out after a congressional decision to open the Coastal Plain to oil development occurs. Congress instituted section 810 to protect subsistence uses. If Congress decides to open the refuge to oil development the legislation itself must contain impact mitigation language specifically for Arctic Village, Venetie, and other villages that use the Porcupine Caribou herd. These people of Arctic Village and Venetie have potentially the most to loose of anyone. They gain no tax benefits being located outside of the organized borough in which development will occur and yet their main food source and base of the economy could be significantly damaged. These villages are not in a position to form a borough themselves. The full board of the Tanana Chiefs Conference adopted a resolution to oppose development in the refuge until hearings are held in the affected villages. A copy of that resolution is attached to this statement.

The entire Kwitchen Indian culture is based upon caribou. There are irreplaceable values potentially in jeopardy. The people of Arctic Village and Venetie want the decision makers in Congress to know how the congressional decision could affect them culturally and economically. A detailed socioeconomic analysis for those villages is needed as well as hearings in those villages.

Comparison is often made between Prudhoe Bay development with the Central Arctic Caribou herd and the potential development in the coastal plain with the Porcupine Caribou herd. This is a <u>very misleading</u> comparison. The Porcupine herd is 15 times larger and occupies its range 14 times more densely than the Central Arctic herd [Whitten and Cameron, 1985]. The Prudhoe Bay development did displace Central Arctic herd calving activity, although the area was never considered a concentrated calving area. Only a small portion of the calving grounds were developed and the Central Arctic herd has other suitable calving areas including the 1002 area of the refuge. The Central Arctic herd is not yet using their available habitat to capacity. The differences in

the Central Arctic herd and Porcupine caribou herd are substantial. It is unscientific and inappropriate to repeat the rhetoric that development of Prudhoe Bay demonstrates compatibility of oil development with fish and wildlife resources and the needs of subsistence users on the whole North Slope.

The Porcupine Caribou have calved in the 1002 area of the refuge every year since observations have been made (1972 to present). Up to half of the Central Arctic herd may calve there each summer as well. Nearly 40% of the concentrated calving area could be affected according to the final resource assessment. Use of 29-52 percent of the insect relief habitats could be substantially reduced according to the report as well. Both displacement from the most suitable calving and insect relief lands to less desirable lands will significantly weaken the herd and alter its distribution. As the resource assessment states, "all biologists participating in the Fish and Wildlife service workshop agreed that displacement from areas of human activity related to oil and gas activities would occur".

A change in distribution of the herd, shifting generally to the east for example, could result in up to a 100% loss of the animals to subsistence hunters in Arctic Village and Venetie. Yet, the Environmental Impact Statement fails to discuss at all, the socioeconomic effects oil development in the Coastal Plan could have on Arctic Village and Venetie.

There are many conclusions in the resource assessment that reasonably indicate that the Porcupine caribou herd will change its distribution patterns and suffer some decline in population. Among some of those conclusions are:

pg. 165 "Losses in Fish and Wildlife and wildlife resource, subsistence uses and wilderness values on the 1002 area would be the consequence of a long-term commitment to oil and gas development in the area."

pg. 139 Reductions in fish and wildlife populations, displacement of fish and wildlife from areas of traditional harvest and reduced access to those resources will adversely affect subsistence uses."

pg. 123 "Major effects on the Porcupine Caribou herd could result if the entire 1002 area were leased and all oil prospects contained economically recoverable oil."

pg. 124 "A change in distribution of the Porcupine Caribou herd could reasonably be expected."

pg. 125 "... loss of important habitat has been shown to have major negative effects on ungulates [i.e., caribou]."

pg. 140 "Residents of Arctic Village, Alaska and Old Crow, Fort McPherson, and Aklavik, Canada could experience some reduced subsistence harvest as a result of potential effects on Porcupine Caribou distributions or possible population declines."

and so forth.

At the full board meeting of 43 Tanana Chiefs Conference villages in March of 1987, a resolution was adopted requesting impact funds appropriated through lease sales specifically for an appropriate substitute food production program in Arctic Village and Venetie. Such a program may include buffalo, muskox, or moose husbandry programs. Any program must provide for the future generation as the damage to the herd could be long-standing or irreversible. The resolution further requests impact aid for the Tanana Chiefs region for mitigation of adverse impacts through land and resource use planning and, for employment training and placement services. A copy of this resolution is attached to this statement.

The Tanana Chiefs Conference concludes that the Porcupine Caribou herd distribution patterns would be altered and the population would likely decline should oil development occur on the coastal plain, even with known mitigation techniques in place. In conclusion, (1) a detailed socioeconomic study of Arctic Village and Venetie is lacking, (2) hearings must be held in these affected communities, and (3) if Congress decides to open the area for further oil exploration and development impact aid must be granted specifically for Arctic Village, Venetie and the Tanana Chiefs region to ensure the survival of those villages dependent upon the herd.

TANANA CHIEFS CONFERENCE, INC.
Board of Directors

Resolution No. 87-64

Support Village Hearings Re: Opening ANWR to Oil Exploration

WHEREAS, the Tanana Chiefs Conference is a tribal organization authorized by the tribal governments of the villages in the TCC region; and

WHEREAS, opening the Arctic National Wildlife Refuge in Alaska is not in the best interest of the member villages without having hearings in the affected villages of Alaska and Canada; and

WHEREAS, there has been only one hearing held at a location which permitted access to the decision making process by rural Alaskans; and

WHEREAS, this issue directly affects the cultural and subsistence life-styles of rural Alaskans and Canadians;

NOW THEREFORE BE IT RESOLVED that the Tanana Chiefs Conference Board of Directors opposes the opening of the Arctic National Wildlife Refuge until proper hearings have been held in Alaska; and

BE IT FURTHER RESOLVED that the report to Congress be delayed until the hearings are held in all the affected villages and can be incorporated into the report.

C E R T I F I C A T I O N

I hereby certify that this resolution was duly passed by the Tanana Chiefs Conference, Inc. Board of Directors on March 19, 1987 at Fairbanks, Alaska and a quorum was duly established.

Daisy Northway
Secretary-Treasurer
Tanana Chiefs Conference, Inc.

Submitted by: Yukon Flats
& Youth Delegates

TANANA CHIEFS CONFERENCE, INC.
Board of Directors

Resolution No. 87-65

Arctic National Wildlife Refuge (ANWR)

WHEREAS, the villages of Arctic Village and Venetie in the Tanana Chiefs region, as well as the Canadian Village of Old Crow are extremely dependent upon the population and distribution of the Porcupine Caribou herd as a matter of economics, nutrition, and cultural heritage; and

WHEREAS, the Porcupine Caribou herd contributes a majority of the nutritional requirements of Arctic Village, Venetie, and Old Crow and a significant economic contribution to several other Tanana Chiefs villages; and

WHEREAS, current governmental reports indicate that the Porcupine Caribou herd could suffer as much as a 40% population declines and/or change in migration paths due to oil and gas exploration and development in the Arctic National Wildlife Refuge (ANWR); and

WHEREAS, other Tanana Chiefs communities would be impacted by increased traffic in the Utility Corridor should such development were to occur; and

WHEREAS, exploitation of rural resources should accrue to the benefit of rural citizens,

NOW THEREFORE BE IT RESOLVED that the Tanana Chiefs Conference directs the TCC to advocate on behalf of the consideration for the maximum protection for the Porcupine Caribou calving and habitat areas within the ANWR in conjunction with any oil and gas exploration development in the ANWR;

AND BE IT FURTHER RESOLVED that should development occur, that the villages of Arctic Village, Venetie, and Old Crow receive impact funds for an appropriate substitute food production program to meet the needs of the future as well as the present in a manner which will enable the village to be as self-sufficient in food production as presently possible;

AND BE IT FURTHER RESOLVED that should development occur, hiring practices for exploration and development include 100% Alaskan hire with a Native preference;

AND BE IT FURTHER RESOLVED that the Tanana Chiefs Conference shall seek impact aid for the TCC region and its villages for mitigation of adverse impacts through land and resource use planning and, for employment training and placement services.

CERTIFICATION

I hereby certify that this resolution was duly passed by the Tanana Chiefs Conference, Inc. Board of Directors on March 19, 1987 at Fairbanks, Alaska and a quorum was duly established.

Daisy Northway
Secretary-Treasurer
Tanana Chiefs Conference, Inc.

Submitted by: Yukon Flats

TANANA CHIEFS CONFERENCE, INC.
Board of Directors

Letter of Intent to Accompany
Tanana Chiefs Conference, Inc. Board of
Directors Resolution #87- 65
Arctic National Wildlife Refuge (ANWR)

It is clear that the Villages of Arctic Villages, Venetie, and Old Crow could experience a multi-generation taking of subsistence hunting of caribou with the exploration and development of oil and gas in the Arctic National Wildlife Refuge (ANWR). Such development would result in the planned destruction of up to an estimated 40% of the Porcupine Caribou herd.[1] If the herd altered its migration path as much as 40% it could mean up to a 100% reduction in available animals to those villages. Each one of those villages is heavily economically dependent upon the Porcupine Caribou herd for its nutritional and cultural requirements. To a lesser degree, the Villages of Fort Yukon and Chalkyitsik are economically tied to the herd as well. In contrast, the Village of Kaktovik has used the Central Arctic herd for the past 4-5 years and at varying times before that as well. The Arctic Coastal plain villages have available sea life and North Slope Borough tax base to supplement their needs. Arctic Village, Venetie, and Old Crow do not have alternative local resources, and the proposed development would not occur in a manner which would enhance any tax base available to these villages, so that these villages will not benefit from development as has the North Slope communities. These villages would be in an extremely desperate economic-nutritional situation without the Porcupine Caribou herd.

Should development occur in ANWR, compensation must be made to affected villages out of the proceeds from the lease sales in ANWR. These funds could be put into a trust fund for an appropriate substitute food production program. Such a program may include buffalo, muskox, or moose husbandry programs. Any program must provide for the future generation and not only the present as the damage to the herd could be long-standing or irreversible.

Exploration and development, if and whenever it may occur, must be done in the most environmentally protective manner possible even if such development methods are more expensive. Any exploration or development of the ANWR oil and

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[1] The 40% figure is taken from the draft "Arctic National Wildlife Refuge Coastal Plain Resource Assessment", more commonly known as the "1002 Report".

gas resources will be at the expense of the Porcupine Caribou herd. The herd would not calve in and utilize that ecological niche without a sound ecological reason. The water quality in the development area will also be endangered triggering a variety of impacts in the food chain upon which the village depends.

Other villages in the Tanana Chiefs region will be affected by increased traffic in the Utility Corridor. Villagers farther away will be impacted as any other State citizen as decision makers regarding the easiest and best use of non-renewable resources.

If oil and gas exploration and/or oil and gas exploration is allowed to occur in ANWR, the Tanana Chiefs Conference will seek impact aid for the region for land and resource use planning and for employment training and placement services. With development of the field all of the TCC villages would be affected, some severely and others less so. This regional impact aid will Mitigate these impacts and will allow local benefit for this development.

STATEMENT OF DR. MILTON M.R. FREEMAN, HENRY MARSHALL TORY PROFESSOR, UNIVERSITY OF ALBERTA, BEFORE THE SENATE ENERGY AND NATURAL RESOURCES COMMITTEE, 15 OCTOBER 1987

Mr. Chairman, Members of the Committee, I am Milton Freeman. In this testimony before you, I have chosen to be brief rather than discursive as the issues I choose to address are straightforward, and much of what I could report, second-hand as it were, will be heard by you first hand during the subsequent public testimony phase of these hearings.

Over the past fifteen years there have been many social impact assessments made in both the U.S. and Canada that bear on these present hearings, for the Northern regions of our continent have felt the quickened pact of industrial development, whether in the form of massive hydro-electric developments or proposals for mining, hydrocarbon or transportation developments. In nearly every case a coalition of groups, representing native residents of the region, environmentalists, church groups, academics and assorted other public interest bodies have counselled extreme caution, if not implacable opposition, to the proposed developments. Why should this be so and why does this continue to be so? Surely after so many earlier attempts to push the industrial frontier north, we must have learned something of how to do it right? The reason petitioners continue to urge caution is not because we have learned nothing, for certainly we have, but rather that the stakes are so high should the predicted negative impacts come to pass. You may ask, <u>why</u> -- if we <u>have</u> learned from our

past experiences -- why are mistakes still made? The answer is simple: there are classes of problems in this world which *are exceedingly complex and* have no technical solution. This is not to say there are no remedies to such problems but merely that there is no quick fix, no easily advanced or surefire solution. We can think of many such no-technical solution problems closer to home: unwanted pregnancy, urban violence, chronic youth employment, sexual and physical abuse of children -- the list goes on and on. There may be solutions, but they seem a long time in coming, and according to many official reports, despite our seemingly best attempts to resolve the problems they do not appear to become less common with each passing year.

The fact is that societies are not machines, in the sense that one can diagnose the cause of the problem, take remedial action and presto -- all works like clockwork once again. Human societies -- even those appearing most simple -- are the most complex, variable, and unpredictable of all ecological systems, and despite their inherent powers of overcoming internally and externally posed perturbations within a certain range, there are finite limits of stress whose thresholds can be exceeded often without too much advance warning.

It is for this particular reason, namely the high cost incurred in societal breakdown, the extreme difficulty of effecting social reconstruction following such breakdown, and the ensuing human casualties and losses whose presences and absences respectively persist long after the event, it is for

these reasons that I spoke of the high risk involved. Scientists and technicians may speak reassuringly of the high degree of certainty their present environmental studies and the sophistication of their technology affords their predictions of control over the events developmental actions may precipitate. However, no true scientist can speak of absolute certainty, only of probabilistic outcomes, and these estimates as refined as they may be in many fields of laboratory science, are still woefully crude when applied predictively to ecological problems. And we must remember that the stochastic or random behavior of many natural events are even more random and unpredictable in the case of human behavior, of human societies' responses to change. This means, simply, that we cannot say how much stress can be tolerated before a society's ability to cope is exceeded, nor can we say how much of what kind of remediation will be required to restore society to its former state of well-being. In the case of small rural communities, we might reasonably conclude that the presumed cure would be a great deal worse than the malady, in terms of long-term intrusive impact. Given all this and the inherent uncertainty of outcome, public policy should presumably aim to sustain a society's own institutional capacity to endure change, rather than try to second guess its tolerance level with the fanciful expectation that any problem caused can be attended to after the fact. If such social and personal problems associated with stress in our own cultural and social

milieu, prove difficult to remedy after the fact, it is a matter of record that they are that much more refractory in social and cultural settings that operate according to quite different and distinctive rules, values, and ideologies from those of the so-called helping professions.

What sort of societal dislocations am I speaking of here, and what sort of externally-mediated impacts could be experienced by residents of Alaskan and Canadian arctic and subarctic communities? The impacts will, I am sure be eloquently enumerated before you by mainly native American and Canadian residents of the region, as will be the anticipated consequences of these impacts. So I will be brief on these points here, but will merely mention the threatened loss of livelihood, of autonomy, of self-worth, of human dignity, that follows from damage to a way of life. Make no mistake, we are not merely speaking *of economic loss, but* of loss of a total and preferred way of life, a loss that affects a person's psychic and spiritual, as well as their physical being. Such an assault on the human person, indeed on human rights, is not ordinarily expected within a tolerant, caring, democratic tradition, at least not today even though regrettably, in the past such happenings were common enough.

To some it is sufficient to invoke the "national interest" to justify the sacrifices the minority must make for the good of the common wealth. Alaskans have lived through many "boom and bust" cycles, as have Yukoners and residents of other

However interesting this numbers speculation may be it isn't particularly relevant to the critical issue Congress must decide. Whether the 1002 Coastal Plain contains some or a lot of oil the issue remains just the same. It is this. Should we, under any set of reasonable ball-park assumptions about the oil potential of 1002, compromise the integrity of this rare ecosystem in order to extract it?

Those who say yes claim the national security is at risk and it is urgent we move promptly to protect ourselves against all kinds of dire circumstances. If, indeed, the security of the nation actually turns on finding a six- or 12-month supply of oil in this Arctic Wildlife Refuge then the battle has already been lost. This, of course, is pure nonsense. Six years ago Interior Secretary Watt used that argument to justify his proposal to open designated wilderness areas for gas and oil leasing. Congress didn't buy his argument and three times passed riders on appropriations bills to prohibit leasing. This year Interior Secretary Hodel is back with Jim Watt's national security argument again.

One is entitled to wonder about this Administration's concern over energy security when it is noted that it has no long-term energy conservation plan, no long-term alternative energy policy, vigorously opposed legislation to increase the energy efficiency of appliances and rolled back the mandated automobile mileage standard from 27.5 miles to 26.

In 1985 the Department of Energy stated that energy conservation "has proven to be the most expeditious way to reduce the need for new or imported

THE WILDERNESS SOCIETY

STATEMENT OF GAYLORD NELSON, COUNSELOR OF THE WILDERNESS SOCIETY, BEFORE THE WATER AND POWER RESOURCES SUBCOMMITTEE OF THE HOUSE INTERIOR COMMITTEE, ON THE COASTAL PLAIN OF THE ARCTIC NATIONAL WILDLIFE REFUGE, JULY 21, 1987

Everyone is familiar with the statistical speculation about the oil potential of the 1.5 million acre coastal plain of the Arctic National Wildlife Refuge. The 1002 Assessment states that there is a 19 percent chance that a commercially producible supply of oil might be found. If such discovery is made, then design models make further percentage predictions of how much oil might be produced at certain inflation rates and price assumptions. Under one scenario, if commercially producible oil is found the model predicts a 75% chance of finding 1.12 billion barrels of oil; a 50% change of finding 2.21 billion barrels; a 25% chance of finding 4.24 billion barrels. None of these numbers mean very much. At best they are guesses based upon the careful weighing of a collection of imponderables. The last estimates of this kind that I recall were in the National Petroleum Reserve--Alaska report which concluded there was a 97 percent likelihood of finding producible oil. This field, located just west of Prudhoe Bay, was expected to contain three times a much oil as the current predictions for the Coastal Plain. The reality is this: 39 holes have been drilled, and each one has been dry. The oil industry is no longer bidding on leases for this field.

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because it happened after it was established as ANWR, when they stopped or limited use of the land. There are some animals that are not back in size yet, even after 17 years of ANWR. All the time my family lived as subsistence living between 1950-64, there's hardly any living things, so a lot of times we have to do without. We lost a lot of living things from birds to fish to flies, when one of the Great change came to us, when fur money was booming. They poisoned a lot of small and large animals, and they used poison for bait. That was way before 1950. So, it's finally regained its living things. Let's just give this land time to regain its living things before another Great change, like maybe never do it again. So, if you judge a land by the abundance of living things as the good health of a land. That 90% of Alaska is wilderness is not true.

We have Indian dance we greatly respect. We dance caribou dance. We imitate caribou movement in various patterns, noise and eating, we do other dance, caribou skin hut dance. To do this dance, we dance in circles in the pattern of support poles formation, we stop and go, we yell 'hee' of opening and closing the door to welcome you to our home. With this, I close saying How! Hee! Aho!

Thank you.

In order to get here, I am losing working time (leave without pay) because I already used up my annual and sick leave time doing this type of work to represent my people. I have passed the hat among eight different organizations to make collection enough for the fare.

If caribou is increase, it's no number to where they stampede like they did in the past, that's when we talk about caribou that tell us that its number is down, that's why we are not excited until we see stampede.

I grew up as a subsistence user. My parents grew up as subsistence life. My parents are not educated in western way, but they are well educated in Indian way of life, which makes them highly intelligent of what is going on around them.

My people believe in environmental value, believes in preserving environmental value. How do you think they preserve environmental value for the last century or so. After the non-Indian came along, there is much damage and misuse of the land and living things and mistakes. Before that time, my ancestor, they are very cautious in preserving the environment. For example, wherever they went, they don't leave any trace behind. Up to today, my people still teach it as practiced it the best they know how because their life depend on it and for their children's future. They got environmental mind in order to survive. Subsistence practice is so close to it because we don't take more than we need. It's based on need. So land to be Wilderness designated with additional subsistence provision is more likely to be accepted.

The Arctic Refuge is not abundant with wildlife as our ancestors have described. The only reason caribou increase in size is

among the Natives. We know this when someone is dying, if he ask for certain Native food (I had experience with patient dying with cancer) we go obtain that food for him, after he eats it, would go back to normal without pain, he gets up happy and talking, then he die.

I am telling you all this because being here a few days this issue about Arctic National Wildlife Refuge, Arctic Coastal area. Seems like there are more questions than there are answers. If you ask me, my answer is no exploration/development for gas and oil in Arctic National Wildlife Refuge in 1002 Arctic Coastal area. In Arctic Village people are totally against development of gas and oil within the whole Arctic Coastal plain because caribou have calves there, for centuries they don't concentrate to one area which they use for calving, they use the whole area in various areas each year. If there is _____ calving area, we would have solved the problem already. All we had to do was fence them in and provide food for them during calving season. This animal just don't faithfully go to same place year after year. So there is no alternative but leave them alone, let nature take its course.

I feel like I ignored of my existence, I feel like I was not represented very well. We ask for hearing in Arctic Village to express our concern because we cannot afford to go where they set up hearings, but got no response. We got here, I found a lot of Congressional people not aware of our existence and concerns. The people that will make decision if Arctic Coastal plain should open up for exploration and development of gas and oil or not. I brought some arts and crafts and material made with caribou skin and so forth just to prove we do use caribou every day of our life.

TESTIMONY OF SARAH JAMES

NATIVE VILLAGE OF ARCTIC VILLAGE

before the

UNITED STATES SENATE ENERGY AND NATURAL RESOURCES
SUBCOMMITTEE ON PUBLIC LANDS AND RESERVED WATERS

June 4, 1987

"Mr. Chairman, my relatives, brothers and sisters, elders, people, friends, chiefs (leaders), I am happy to be here. I came from a long way. I want you to listen to what I have to say. (first spoken in my language, Gwitchin, then translated in English.)

My name is Sarah James. I am from Arctic Village, Alaska. Arctic Village is located in a remote, rural area.

I said this because it's located at a unique location 118 miles northeast of the Arctic Circle, whose only transportation is by small bush planes; no road, no waterway. It takes three house to get to a hospital, regardless of the situation.

Being a Village Health Aide, I study nutrition at the Alaska Native Medical Center, Anchorage, Alaska. Caribou has the highest nutrition value. They have to study Native food value because they deal with village people.

Language is important to use. We speak our language. English is our second language, our government system is different. Records show among the Natives in Alaska and here, too, I guess, the suicide, alcohol problems, diabetes is high, but we don't have that problem between Arctic Village and Venetie Health Aide since 1970. I never really had to deal with low iron deficiencies in Arctic Village. When some of you get up there, you will see we are talented, artistic and musical. Native food works wonders for use

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ARCTIC VILLAGE COUNCIL

POSITION STATEMENT CONCERNING OIL AND GAS DEVELOPMENT

IN THE 1002 AREA OF THE ARCTIC NATIONAL WILDLIFE REFUGE.

AT A GENERAL MEETING HELD ON THE 15th OF APRIL, THE PEOPLE OF ARCTIC VILLAGE OPPOSED OPENING OF THE COASTAL PLAINS OF THE ARCTIC NATIONAL WILDLIFE REFUGE (ANWR) TO FURTHER OIL AND GAS EXPLORATION.

This position was taken after careful consideration and discussion with our elders.

Our people are basically caribou dependant. For generations, we have depended on the porcupine caribou herd for survival. They are basis of our very life. It fed, sheltered and clothed our ancestors and continues to provide for our families today. The very location of our village is situated on good hunting grounds.

Around our village are remains of caribou fences older than 300 years. They still point in direction, the caaribou move today. This shows how the caribou continues to travel through Arctic Village to support our people.

Arctic Village is located in the south mountains of the Brooks Range. Salmons do not travel this far up river, because of falls further down the river. We get a limited amount of moose and sheep, so we depend mainly on caribou. If they declined or move their migration route away from our village, we would be in a desperate situation. There are almost no jobs in our region and costs are high.

For example, chicken cost over $3.00 a pound and gasoline is $3.40 per gallon. These are due to our isolated, which contributes to high cost of transportation.

For this reason, we do not want to see any exploration and development on the ARCTIC NATIONAL WILDLIFE REFUGE.

April 30, 1987

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First Chief

Second Chief

First Council

Council Member

Council Member

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Council Member

seriously involve the native residents of the region in your deliberations. This particular instance, the proposal to open the Arctic National Wildlife Refuge to industrial development provides an interesting test of the usefulness of the Bruntland report (on Environment and Development) and the newly-revised World Conservation Strategy, both of which enlightened reports I am certain the United States officially endorses. Bruntland speaks of sustainable development, and according to the World Conservation Strategy that is what conservation is all about. But both go further in that they link conservation inextricably with concerns about equity and social justice. Those who expect the United States will provide enlightened and strong leadership in respect to the stewardship of our beleaguered global environment, will doubtless look to this ANWR outcome to see if the U.S. is as resolute at home as it expects others to be elsewhere in the appropriate disposition of our common environment.

Thank you.

the outcome. In this case, given the many interrelated variables involved, the optimum pace of change is best gauged intuitively from within the society rather than be technical or other means from without. And finally, we now understand "development" to be not an event, but rather a process: it is a process that enriches, that strengthens, that empowers people to take control over their lives. To the extent that investment on the frontier immiserates, weakens, and strips people of their humanity, it cannot be considered development and it is to be deplored -- no matter how many others gain material riches from the enterprise. No massive industrial development with potential for great harm can surely be contemplated in this day and age, without every consideration being given to the environmental and social costs likely to be incurred. My conclusion, as a social scientist and ecologist is that the best information to be provided in your quest for a reasonable solution will come from the statements you will receive from northern residents, and not from academically-trained outsiders. When the so-called experts disagree among themselves -- as I'm sure they will continue to do -- the surest path to correct solution is the one with the strongest moral underpinning. The enduring spirituality of native Americans, which is so strongly manifest today, provides the respected members of this Committee and your congressional colleagues, with an assurance as to the correct path to follow. Discerning this path however, will require that you

who hoped to see jobs created in their villages to enable them to purchase such needed equipment as guns, boats, motors, snow machines, household appliances, and all the other consumer items people now depend upon. The warning about disruption to the assured supply of key subsistence resources came not just from social scientists who theorize in their warm and distant academic nooks, not from public-spirited and sometimes misguided urban-based romantics who think of life in rural Alaska or the Yukon in only the rosiest of terms.

In case I am mistakenly cast in the role of such a redundant outsider, let me explain my presence today in the following way. I am not here to anticipate or attempt to provide scholarly justification for the testimony you will be presented with next week, but rather to voice concern lest this subsequent evidence not be accorded appropriate weight when the decisions have to be made. The reason I say this is because though social scientists know so very little about the mechanics of social change and far less about how to predict outcomes in such changed situations, there are some things that now seem accepted. The first, which has direct bearing on this committee's responsibilities, is that if social change is directed from within a society (rather than from without) the ensuing adjustments are most likely to be accommodative to the needs of society, more likely to be effective and enduring than when imposed from without. The second relevant factor appears to relate to the pace of change in determining the nature of

frontier regions. The booms may be munificent -- for some -- but the busts are painful for many more people and for far longer periods of time. To encourage economic development that perpetuates the damaging boom and bust economy is hardly enlightened public policy. If the answer is: "We will moderate the boom's worst effects and spread the benefits as far as possible" then I say "welcome to dreamland". Under our present system of government, that just cannot be done. Mr. Justice Thomas Berger in his truly enlightened report on the Mackenzie Valley Gas Pipeline Inquiry a decade ago, observed that in order to mitigate the worst of the social impacts of the proposed pipeline the steps taken would need to be so authoritarian, so draconian, that no democratic government would undertake to impose them, no union would allow them, no free society could tolerate to that degree the infringement of its civil rights. Yet, the alternative, in its most unfettered, promised such an assured disruption of village life, such a litany of problems (including alcoholism and substance abuse, family disruption and violence, increasing accidents, illness and suicide, prostitution and loss of traditional family values and so on) that the good judge was forced to conclude, as the villagers had argued, that the costs of the development as proposed were just too great. It is important to observe that the willingness to forego the benefits of industrial boom, of high wages and employment opportunities, was made by individuals who needed cash incomes,

energy resources; and in fact it now contributes more to balancing our national energy ledger than does any single fuel source". Yet just two months ago when Deputy Secretary of Energy William Martin was asked by the Senate Energy and Resources Committee about the Administration's ideas on conservation and renewable energy he stated the Administration has "no specific proposals to help those sectors at this time". So much for Administration worries about national security.

For purposes of addressing the pending issue that Congress must decide, let's assume that there is a world class oil deposit of 3 billion barrels in 1002. Over the 25-year life of the oil deposit that would represent an average of about 2 percent of our current annual consumption of oil.

If Congress were to mandate, as it surely should, that the fleet average for all new household vehicles shall be 30 miles per gallon starting with 1993 production models that would save 8 billion barrels of oil by 2025, the projected life of any significant oil find in 1002. Ironically, a 27.5 mile fleet average instead of the Administration's 26 miles would save 3.2 billion barrels during the same period. If a 6 billion barrel deposit were found that would still be 2 billion barrels less than the 8 billion that could be saved by a 30-mile fleet average during the life of the oil field. And, of course, the savings would continue after the field was exhausted. A 35-mile fleet average would save several billion additional barrels.

The technology for achieving these savings in automobile consumption is already here, in place of being used. Compared to the rest of the world we are a laggard nation in automobile fuel economy.

Doing something decisive and effective about energy conservation, especially automobiles, involves some difficult political decisions but they will look easy compared to the choices we will face if we continue to procrastinate.

A policy that continues primary emphasis on digging up a little more fragile land for a little more oil is not a substitute for a sound long-range energy program and, in fact, will perpetuate our increasing dependence on foreign oil by creating the illusion that we are doing something meaningful.

Pretending to address the energy issue by drilling in the Coastal Plain of the Arctic National Wildlife Refuge would be at the same time an act of self-delusion and a tragic degradation of a unique world resource. Whatever oil may be found it will not resolve or significantly affect any perceived national security problem. It will only further deplete that dwindling supply of the planet's rarest commodity -- a complete and balanced ecosystem unaltered by human activity.

Unlike the Arctic Refuge, not a single national park, national forest, wildlife refuge or designated wilderness in the lower 48 states qualifies as a complete and balanced ecosystem unaltered by human activity. They are all fragmented, compromised, incomplete ecosystems surviving as little show piece islands increasingly degraded by incompatible external and internal human activities.

Interior Secretary Hodel argues that the national interest requires that we explore and exploit all promising gas and oil potential. If we do not we may as

well hang out a sign telling the Petroleum Exporting Countries: "Take advantage of us because we lack the will to take care of ourselves."

It is time we recognized that there is no end to this rationale for exploitation of any resource that is available and profitable without regard to long-term environmental consequences. Indeed, Hodel's apocalyptic rhetoric applies with equal force to all nationally protected conservation units -- Yellowstone, Yosemite and Glacier National Parks, all designated wilderness, including the Bob Marshall, and the whole wildlife refuge system. If we are going to drill the Arctic Refuge there is no rational reason to exempt our parks or any other potential source of gas and oil. After all, there is no other conservation unit as rare or fragile or more important as a world conservation resource than the Arctic Refuge. If Mr. Hodel had come before Congress to propose drilling for gas and oil in our national parks and other conservation units it would have been dismissed as a bad joke. For all of the same reasons it is an equally bad joke to propose drilling in the Arctic National Wildlife Refuge.

Even the Interior Department Draft Assessment of 1002 states that "The Arctic Refuge is the only conservation system unit that protects, in an undisturbed condition, a complete spectrum of the various Arctic ecosystems in North America." It further states that this area is "the most biologically productive part of the Arctic Refuge for wildlife and is the center of wildlife activity on the Refuge".

In 1977 the U.S. Fish and Wildlife Service successfully opposed the routing of a gas pipe line across the Arctic National Wildlife Range stating that "such

a crossing is clearly not compatible with the basic purpose of the Arctic Range". . . The Fish and Wildlife Service continued saying, "we do not believe that the long-term national interest would be served by committing this unique area to development for short-term benefits when its outstanding values for wildlife and wilderness would be forever lost. To protect our public trust and to exemplify our good conscience as concerned ecologists, we must object strongly to any development which would theaten the integrity of the Arctic National Wildlife Range". . . "such activity would destroy wilderness values and irretrievably disrupt many wildlife populations and their habitats". . . this Arctic Range is "the last unspoiled area of its kind in the entire Northern Hemisphere".

That says it all. It is, in fact, literally the very last of its kind. Once compromised we will never again see on the planet a comparable Arctic ecosystem representing tens of thousands of years of nature's intricate evolving works unaffected by human activity.

Several years ago Joseph Wood Krutch made a telling observation pertinent to the issue before us. He said, "If people destroy something replaceable made by mankind, they are called vandals; if they destroy something irreplaceable made by God, they are called developers."

There are many landscapes, many wildlife habitats, many undisturbed natural areas far more valuable to mankind than any commodities that may be extracted from them. This Arctic Coastal Plain is such a place. If it is not, then I know of no other. If fully developed, several thousand people will live

and work on the Arctic Plain. Huge amounts of gravel will be mined and roads built for heavy equipment; millions of gallons of polluted and toxic water and drilling mud will be stored in fragile ponds and washed away into bird and fish habitats. All of these activities will have serious environmental consequences that cannot be predicted or measured. To argue the proposition that these activities can go on for twenty-five years without major, permanent adverse consequences would be challenged by every ecologist I know of in this country. Indeed, the Interior Department report states: "The existence of oil facilities and activities would eliminate the opportunity for further scientific study of an undistrubed ecosystem."

The question Congress must answer is this:

Do we want to save this rare and remarkable ecosystem in its perfectly natural condition for its intrinsic, esthetic, scientific and philosophic values or do we want to compromise it for its transitory commercial values? We can't have it both ways. We have literally thousands of examples of compromised and degraded ecosystems and almost none that are not. The choice should be clear and simple.

During the past 40 years as an observer and sometime participant in the debates and conflicts over the issue of exploitation of commodities from the public lands versus the preservation of natural habitats the argument has always been the same. Those who insist that all marketplace commodities should be exploited invariably argue that the economy or national security or both require it. They have won most of the arguments in the arena of public lands and almost

all of them in the private sector. The result is that very little of natural America is left. We have colonized almost every nook and every niche. Nobody argues that we need not commercially utilize any of our commodity resources. The question is: under what circumstances and guidelines should commodities be developed and under what circumstances should they not. The tragedy is that a major portion of the environmental damage done to the nation in the name of the economy or national security has been unnecessary, economically costly to the nation and degraded the quality of our lives.

Some twenty odd years ago I was beneficiary of the good fortune to serve on the Senate Interior Committee with one of the most distinguished and influential conservationists of our time, Senator Clinton Anderson of New Mexico, then Chairman of the Interior Committee. He was the most important moving force in the Senate behind the Wilderness Act of 1964. A year before it passed he wrote an article for the July 1963 issue of American Forests. What he wrote should be read, reread and pondered by everyone concerned about our future.

> Conservation is to a democratic government by free men as the roots of a tree are to its leaves. We must be willing wisely to nurture and use our resources if we are going to keep visible the inner strengths of democracy.
>
> "For as we have and hold dear our practices of conservation, we say to the other peoples of the world that ours is not an exploitive society -- solely materialistic in outlook. We take a positive position -- conservation means we have faith that our way of life will go on and we are surely building for those we know will follow. . . .
>
> "There is a spiritual value to conservation and wilderness typifies this. Wilderness is a demonstration of our people that we can put aside a portion of this which we have as a tribute to the Maker and say -- this we will leave as we found it.

"Wilderness is an anchor to windward. Knowing it is there, we can also know that we are still a rich nation, tending our resources as we should -- not a people in despair searching every last nook and cranny of our land for a board of lumber, a barrel of oil, a blade of grass, or a tank of water."

-- Senator Clinton P. Anderson of New Mexico in American Forests, July 1983

I suggest that it is not too late to save something rare, beautiful and irreplaceable that cannot be priced in Adam Smith's marketplace.

# # #

ARCTIC NATIONAL WILDLIFE REFUGE

Established in 1960 to protect outstanding wildlife, wilderness and recreational values, this Arctic wilderness of boreal forests, dramatic peaks and glaciers, gentle foothills and undulating tundra is the only protected area in the world that encompasses a complete spectrum of arctic and sub-arctic ecosystems.

WILDLIFE

The coastal plain of the refuge is a narrow strip of tundra (average width: 25 miles) wedged between the Arctic Ocean and the Brooks Range. The Department of Interior considers it to be "the center of wildlife activity for the entire refuge." The area is rich with arctic life: Caribou, moose, wolves, grizzlies, polar bears, arctic foxes, wolverines, dall sheep, muskoxen, and hundreds of thousands of birds -- snow geese, tundra swans, black brant and more. In all, about 165 species use the coastal plain. The level of activity is intense. Animals give birth, nurse and feed their young, and set about the critical business of fueling up for the severe winter ahead.

WILDERNESS

The coastal plain is one of America's most beautiful and remote wildernesses. In summer, the lush green tundra is sprinkled with wildflowers; in fall, dwarf willows and bearberry bushes flame golden and red. Everywhere is the sensation of vastness -- the tundra stretching like a carpet in all directions, the wide, braided river runs, the endless summer sunlight, the clear arctic silence.

THE LAST PLACE

The 125-mile long coastal plain is the only protected portion of the 1100 miles of Arctic Ocean coastline in Alaska. About 90 percent of Alaska's entire north slope is already open to oil and gas leasing and development.

From The Alaska Coalition
June, 1987

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THE 1002 REPORT

In 1980, after the House twice passed legislation to designate the coastal plain wilderness, the Senate (led by Alaska Senator Ted Stevens) blocked the effort. Instead, section 1002 of the Alaska Lands Act directed a government study of the area. The "1002 Report" required the Interior Department to study the wildlife and wilderness values of the coastal plain, along with any oil and gas potential.

INTERIOR'S RECOMMENDATION A draft report, released in November, 1986, raised an outcry from conservationists, who called the document flawed and insufficient. Following a public comment period, the draft report was significantly altered and issued in final on April 19, 1987. The final report significantly downgraded the impacts which were described in the draft report and substantiated by "baseline" data accompanying the report. Interior claimed the draft report had been riddled with "editor errors." Conservationists called it a whitewash. Interior Secretary Hodel recommended Congress open the coastal plain to oil and gas leasing and development. The area cannot be developed unless Congress acts.

REPORT'S FINDINGS

"The coastal plain has outstanding wilderness qualities: scenic vistas, varied wildlife, excellent opportunities for solitude, recreational challenges, and scientific and historic values."

"The 1002 area is the most biologically productive part of the Arctic Refuge for wildlife and is the center of wildlife activity on the refuge. Migrating caribou and the post-calving aggregation offer an extraordinary spectacle. The area presents many opportunities for scientific study of a relatively undisturbed ecosystem."

"The expected displacement and reduction of wildlife populations and natural processes would cause a major reduction in the value of the area as a pristine, natural scientific laboratory. The wilderness value of the coastal plain of the Arctic Refuge would be eliminated."

According to the report, there is an 81 percent chance that no economically recoverable oil lays beneath the coastal plain. The "wide range of predictions reflects a relatively high degree of uncertainty regarding the true value of the oil and gas potential of the coastal plain." If, on the one in five chance that recoverable oil is discovered, "the average of all estimates ... is 3.2 billion barrels." However, there is a 95 percent chance of finding 0.6 billion barrels, (about six weeks worth of oil at present U.S. consumption rates), and only a five percent chance of discovering more than nine billion barrels of oil (about the same amount of oil found at Prudhoe Bay).

From The Alaska Coalition
June, 1987

DEVELOPMENT AND WILDLIFE

Both the draft and final 1002 report were found seriously deficient by the conservation community and the EPA. After six years of study costing millions of dollars, little is known about cumulative effects of development or harm to specific species. However, it's interesting to note the differences between the draft 1002 and the final report.

MUSKOXEN Once native to the north slope of Alaska, the muskox population was completely extirpated by hunting in the late 1800s. The species was reintroduced to the coastal plain in 1969 and now numbers about 500. The draft 1002 report stated development could cause a population decline of up to 50 percent. The final was amended to: "repeated disturbance could ... cause a decline in the population ... and a change in distribution."

SNOW GEESE The coastal plain is an important staging area for snow geese, which have been in decline in western North America. The geese pause on the 1002 area to build energy reserves before beginning their long southern migration. In some years, as many as 325,000 use the plain. The draft report estimated that up to 50 percent would be displaced from the coastal plain, and there could be a decline in population of 5 - 10 percent. The final report vaguely concluded that there could be indirect mortality, reduction and displacement.

CARIBOU The 180,000-member Porcupine caribou herd migrates each spring from wintering grounds in Canada to the coastal plain. In most years the cows give birth there and the herd gathers in great numbers to begin its wide-ranging movement over the coastal plain, foraging and seeking relief from mosquitoes and parasitic insects. The draft report found that development could cause up to a 40 percent decline in the herd. According to the final report, no appreciable population decline is expected as a result of development.

POLAR BEARS Among other threats to polar bears, the 1002 report found that females that den in the coastal plain could be disturbed or killed by development. Recent studies suggest that female mortalities already are at the maximum the species can sustain. According to the final report, there would be no impacts on the overall survival of the species unless similar oil and gas development takes place elsewhere in arctic Alaska and Canada. In fact, there is similar intensive development -- onshore and offshore -- in polar bear habitat in Canada and Alaska. Ninety percent of Alaska's arctic north slope alone is open to development, and much of it has already been leased.

OTHER SPECIES The final report also indicated development would effect other species: wolves and grizzly bear populations could be "moderately" effected; the numbers of wolverines could be reduced by half; and some effects would be evident among arctic foxes, dall sheep, moose, waterfowl and marine mammals.

From The Alaska Coalition
June, 1987

PRUDHOE BAY

Prudhoe Bay has been referred to as a model and a laboratory for sensitive development in the arctic, yet little is known about environmental damage caused by oil drilling there. Monitoring has been limited, but what little is known raises serious concerns.

OIL SPILLS Since 1973, thousands of oil spills have been reported in the Prudhoe Bay area; the two largest were 200,000 and 658,000 gallons. In the past two years, 953 oil spills, totalling 193,000 gallons, were reported.

HAZARDOUS WASTES Each of the 500 to 600 wells currently in the arctic generates millions of gallons of waste and drilling muds per year. Storage sites for waste, such as tundra ponds and pits, have in many cases proven inadequate; state and federal agencies are now finding "pervasive" leakage. Waste contains heavy metals such as arsenic, lead and copper.

AIR POLLUTION The vast industrial complex at Prudhoe emits half as many oxides of nitrogen as New York City. Cumulative air pollution from Prudhoe and other circumpolar industrialization weakens the ozone layer and melts permafrost, according to published reports.

PRUDHOE BAY AND 1002 -- TWO VASTLY DIFFERENT AREAS
Much has been made of the fact that the Central Arctic caribou herd, which inhabits the Prudhoe area, has tripled in size since development began there. Caribou populations are cyclical and are subject to precipitous changes. In North America, their numbers currently are expanding. Regardless, the 1002 area and Prudhoe Bay are two vastly different areas inhabited by vastly different wildlife and, as the draft 1002 report stated, "comparisons should be drawn with caution."

The coastal plain (1002 area) of the Arctic Refuge is the principal calving ground for the 180,000 member Porcupine caribou herd which migrates each spring from Canada. Prudhoe Bay has never been traditional caribou calving grounds.

The coastal plain is one-fifth the size of the Prudhoe Bay area, and the Porcupine herd is twelve times the size of the herd at Prudhoe. Obviously, the caribou at Prudhoe have a much larger area in which to move to avoid development. In addition, the caribou at Prudhoe do not migrate; the Porcupine caribou must have freedom of movement to survive.

Perhaps most important is the fact that the Prudhoe Bay area has never had the abundance and diversity of wildlife that inhabits the coastal plain. About 165 species of fish and wildlife use the coastal plain. In contrast, the Prudhoe Bay area is nearly barren of wildlife; predators that once inhabited the area, such as grizzlies and wolves, have been driven out by development and hunting. Their absence may have been a factor in the population increase of the Central herd.

From The Alaska Coalition
June, 1987

EXPLORATION AND DEVELOPMENT

EXPLORATION According to the final 1002 report, exploratory drilling would require construction of airstrips, roads, drill pads and reserve pits. Although one exploratory well and reserve pit might occupy only 10 acres, roads would be constructed from the drill site to water sources which might be some distance away. Aircraft would be used to transport equipment, personnel and freight. It is unclear how many exploratory wells might be permitted.

Tremendous amounts of fresh water would be needed to build ice roads, drill pads and airstrips. One exploratory well, for example, could require up to 15 million gallons of fresh water. Such quantities simply are not available on the coastal plain. The EPA, among others, has chided Interior for failing to address where such large quantities of fresh water will come from.

DEVELOPMENT Roads, airstrips, pump stations, power generators and marine docking facilities would be constructed, as would living facilities for the thousands of workers estimated to be needed for development. In addition, a vast network of feeder pipelines would be constructed across the coastal plain. Marine and air traffic could, at times, be almost constant.

The final 1002 report states that several million cubic yards of gravel are required to develop one oil field. While conceding that there are significant shortages in the area, the report is vague about the effects of dredging river bottoms or mining other areas for gravel. The report notes that: Erosion and stream pollution will remain "after the life of the project."

The long-term, major effects of development on the area, according to the 1002 report:

> "The industrial use of the limited natural fresh-water sources of the 1002 area would be a major effect."
>
> "Noise generated by aircraft operations, drilling operations and traffic would be major and continue throughout the field life."
>
> "...the visual effect of such activities would be a major, long-term consequence of full leasing."

The conservation community, the EPA and the Congressional Research Service have found the Interior Department's impact statement severely inadequate. The 1002 report does not evaluate cumulative effects nor the effectiveness of proposed mitigation measures and there is little discussion of how the area might be rehabilitated following development.

From The Alaska Coalition
June, 1987

NATIONAL ENERGY SECURITY

Potential oil from the Arctic Refuge Coastal Plain has consistently been linked to national energy security by the Reagan Administration. Yet recently, before a congressional subcommittee, Interior Secretary Donald Hodel admitted that oil from ANWR will not "have the ability to somehow make this country energy independent."

DEPENDENCE ON FOREIGN OIL Each year, the U.S. consumes about 5.8 billion barrels of oil. The nation currently imports about 38 percent of its oil. The bulk of imports come from Mexico, Canada and Venezuela; only about 7 percent of our energy needs is imported from the Middle East. It is estimated that by the year 2000, the U.S. may be importing 50 - 60 percent of its oil.

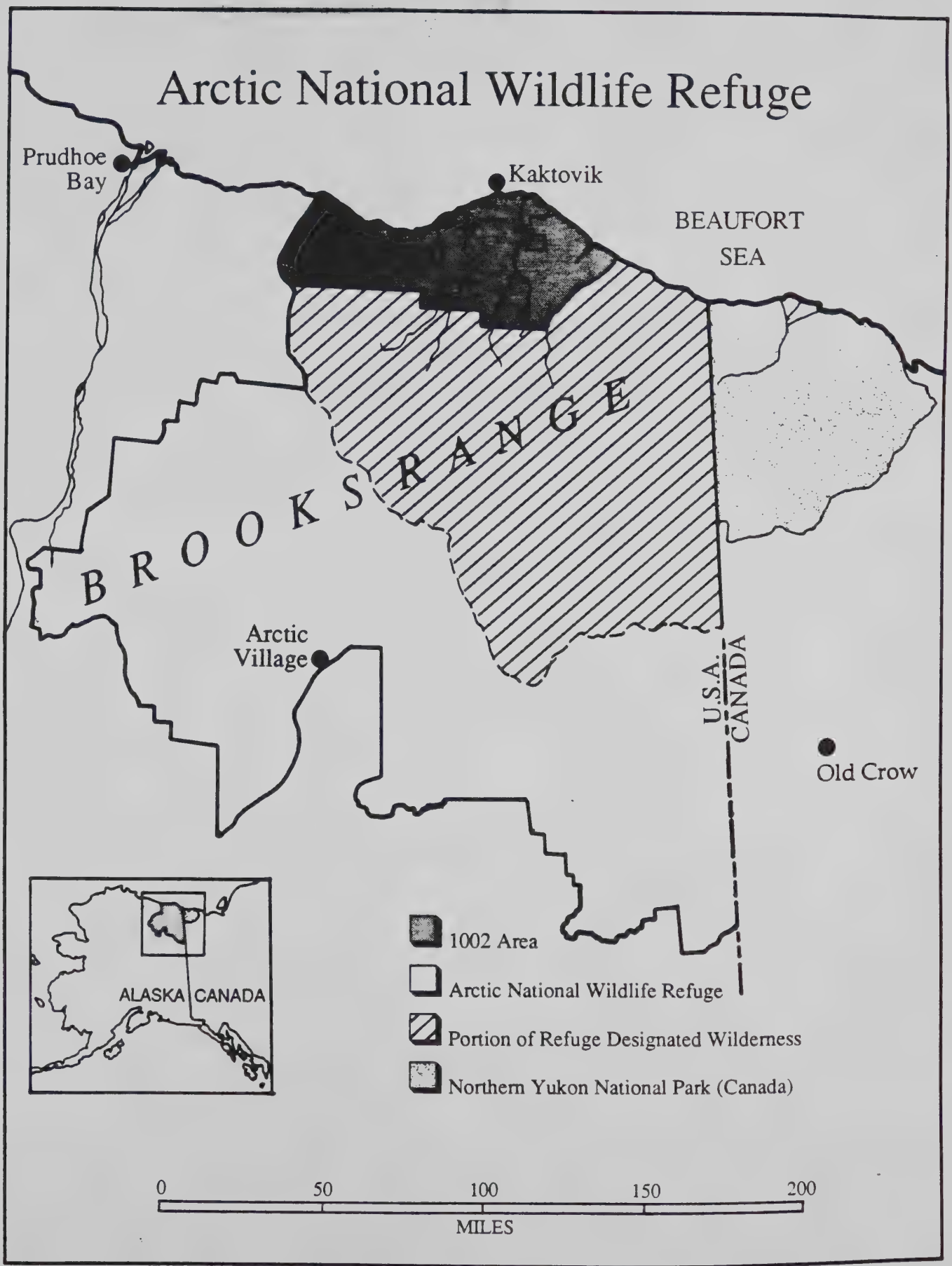
THE ARCTIC COASTAL PLAIN'S POTENTIAL Even if oil is discovered in the coastal plain (a one in five chance), at peak production it will provide less than five percent of our energy needs (assuming a mean estimate of 3.2 barrels). Over the life of its production potential, the coastal plain would produce less than 2 percent of our energy needs, or 290,000 barrels per day. That much and more could be saved by raising the U.S. auto fleet efficiency by two miles per gallon. The Congressional Research Service recently reported that the administration's 1986 decision to roll back new car standards from 27.5 to 26 mpg will cost us up to 400,000 barrels per day.

OIL RESERVES The U.S. has in-place, known oil reserves of about 28 billion barrels. In addition, there are over 300 billion barrels of known, unavailable oil which could be recovered with the development of enhanced recovery techniques. Other potential oil lies in undiscovered reserves and known heavy oil reserves which are not yet economically recoverable. With such reserves, the nation has considerable latitude in dealing with any perceived energy crisis.

U.S. ENERGY POLICY The Reagan Administration has promoted the very energy crisis it has conjured up. Since 1980, the administration has cut by 90 percent spending on programs to develop energy conservation and alternative energy sources. The real impending crisis is not U.S. dependence on foreign oil, but the fact that we are so shockingly shackled to oil itself.

CONSERVATION AND ALTERNATIVE ENERGIES The nation must develop a balanced energy policy that will free us from being hostage to oil. Such a policy will stress conservation programs, development of alternative energies and enhanced oil recovery technology. The U.S. has increased its energy efficiency by 27 percent since 1979, but more savings could be achieved with little inconvenience. Some examples: weatherization of leaky attics and office buildings; increased efficiency of appliances and industrial energy use; improved transportation fuel efficiency.

From The Alaska Coalition
June, 1987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Wilderness

Fifty Years of Conservation

FALL 1986

Land, Life, and Risk in the Arctic

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Last Chance for 50% Deductions?

MONUMENT VALLEY, UTAH/ARIZONA BY DALE SCHICKETANZ

Under present tax laws, individuals in the top tax bracket may deduct from their income taxes 50 percent of the value of a charitable gift. The new tax law currently under consideration contemplates a substantial reduction in the top tax bracket—possibly to a level of 28 percent.

If the tax bill passes, 1986 will be an ideal time to make a major gift to The Wilderness Society in cash, securities, real estate, or personal property. Contributions made in 1986 still qualify for a deduction of up to 50 percent, while it is proposed that donations in future years will qualify for much lower deductions.

If the new tax law passes, we would be glad to discuss with you its impact on charitable gifts. We would also be pleased to discuss with you a gift of stock, real estate, or personal property.

For more information, please write or call

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Wilderness

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Dall sheep in the Brooks Range, Arctic National Wildlife Refuge
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COVER: Polar bear and cub during an arctic summer. MICKEY SAXTON
ALASKAPHOTO

Wilderness Watch

News, Notes, and Comments from The Wilderness Society

An Agenda for the Parks—and Protection for Big Sur?

The National Park Service regional directors met in Ft. Collins, Colorado this past summer to discuss the issue of natural resource protection in the parks.

The Director of The Society's National Parks Program, Maddy Fishel, attended the meeting and participated on a panel of conservation organizations, including The Conservation Foundation, and the National Audubon Society. Fishel emphasized The Society's particular concerns regarding the Reagan administration's actions in cutting funds for acquisition of private inholdings, and presented The Society's long-term agenda for the parks, including strong protection from internal and external threats, acquisition of park inholdings, and designation of new parks, such as the Tallgrass Prairie in Oklahoma and the Great Basin in Nevada.

In a related activity, Ms. Fishel appeared before the Senate Public Lands Subcommittee on July 16 to testify in favor of S.2159, a bill cosponsored by Senators Peter Wilson (R.CA) and Alan Cranston (D.CA) that would designate 140,000 acres of California's Big Sur as a National Forest Scenic Area. (About 75,000 of those acres are part of Los Padres National Forest; 55,000 are privately owned; and the rest belong to the state.)

Fishel commended Senator Wilson for his foresight and leadership in sponsoring the bill and Senator Cranston for his cosponsorship and longstanding commitment to the federal protection of Big Sur. At the same time, however, she recommended that significant strengthening provisions be added to the bill to safeguard the area's rural quality and fragile ecology. Among her recommendations were limitations on grazing, on off-road vehicle use, and on new development of federal lands—resorts, concessions, and administrative facilities. Fishel also affirmed The Society's support of continuance of Forest Service ownership of acquired land. (As presently drafted, the bill allows the conveyance of acquired lands to county, state, or private land protection organizations.) Fishel also recommended that the federal government be given specific authority to acquire land, at least where the owner is willing to sell. "Acquisition is an important tool that undoubtedly will play a key role in achieving lasting protection for Big Sur," she said.

Wilderness Update

Tennessee

On July 16, Tennessee Congressmen James Quillen (R.TN) and John Duncan (R.TN) introduced a bill that would create six new wilderness areas—totaling 33,500 acres—in Tennessee's Cherokee National Forest, including areas not dealt with in the bill introduced in the last Congress. The bill, if passed, would give wilderness designation to areas in Tennessee for which protection is vitally important.

Although speedy action is expected in the House, the Senate Agriculture Committee has not yet scheduled a hearing. If the Senate does not act before Congress adjourns, Tennessee will not see a wilderness bill this Congress.

Michigan

The Society underlined its commitment to passage of a Michigan wilderness bill recently by hiring Michael Kellett to coordinate state efforts to secure Michigan's first wilderness bill. Kellett is a seasoned Michigan conservationist with impressive credentials in forest planning and wilderness work. His on-the-spot involvement will greatly enhance the chances for a Michigan bill this year.

Michigan, however, is in the same position as Tennessee. A good wilderness proposal, H.R. 148, sponsored by Congressman Dale Kildee (D.MI), passed the House last year. This year, Senator Carl Levin (D.MI) introduced a scaled-down version of the House bill, to which conservationists hope to add two areas, but a hearing has not yet been scheduled by the Senate Agriculture Committee.

Nevada

In response to the House passage of a broadly supported bill introduced by Congressman Harry Reid (D.NV), which designates 592,000 acres of wilderness and creates 174,000-acre Great Basin National Park in Nevada, Senators Chic Hecht (R.NV) and Paul Laxalt (R.NV) introduced their own bill allocating only 44,000 acres for the park. The Society, in testimony before the Senate Public Lands and Reserved Water Subcommittee on July 15, called the bill inadequate and unacceptable. "The virtue of a Great Basin National Park is that it is capable of encompassing in one unit an amazing variety of ecotypes, ranging from desert sagebrush to alpine tundra," said The Society's Michael Scott. "The Hecht proposal would only designate the tops of the peaks as wilderness, leaving out important and diverse areas below."

The bill also contains a number of management directives that would, in effect, give less protection to the new park than it now enjoys under the auspices of the national forest from which the park would be created.

Colorado

The House Public Lands Subcommittee held hearings in June on H.R. 34, a bill introduced by Congressman Tim Wirth

James Marshall 1896–1986

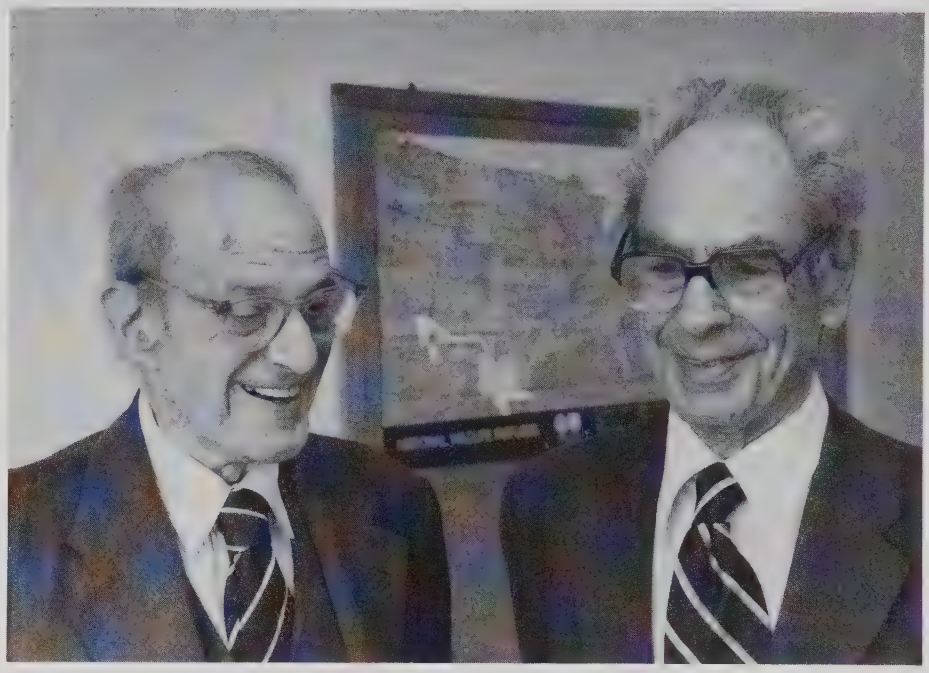
On the occasion of his ninetieth birthday in the spring of 1986, his friends at The Wilderness Society sent James Marshall a suitably congratulatory card. "Thank you ever so much," he replied. "Sometimes I feel 70; sometimes I wonder how I will make the block to my office. But the balance is pretty good and it is helped by such rousing greetings as you have given me."

Both the wit and the durability were characteristic of this man—who served on the Governing Council of The Society from 1942 until his death on August 11, 1986. The connection was a natural one. He was the oldest of the three Marshall brothers, born and raised in New York City but given the blessing of long summers in the family home in the Adirondacks and with that an abiding love of wild country that none of the brothers ever lost. The other two, of course, were Robert—who joined with seven other like-minded souls to found The Wilderness Society in 1935 (and immediately roped both his brothers into membership)—and George, who has served on the Council himself for forty-nine years.

A lawyer by profession, James started his career in the law firm of his father, Louis, the foremost constitutional lawyer of his era, then founded the firm of Marshall, Bratter, Greene, Allison & Tucker in New York City in 1934, and was still counsel to that firm when it dissolved four years ago. He also served as counsel to the firm of Burns Summit Rovins & Feldesman. But his life and career went far beyond just those legal connections.

In 1930, he became a member of the American Jewish Committee and was a member of its Board of Governors and an Honorary Vice President when he died. He was one of the founders of the American Friends of the Hebrew University of Jerusalem, was a member of its Board of Governors, and endowed the James Marshall Fund for Research in the University's Department of Psychology, as well as the Louis Marshall Chair in Environmental Law.

He was active in New York politics on one level or another much of his life, beginning in the late 1920s and early 1930s. In 1933, he managed the Manhattan borough campaign of Fiorello H. La Guardia when the colorful New Yorker made his first run at the mayoralty of New York City. In 1935, La Guardia appointed Marshall to the Board of Education, on which he served—with several terms as its head—until 1952. He also served as an adjunct professor at the New York University Graduate School of Public Administration and was the author of a novel, children's stories, numerous articles, and six books on political science and legal philosophy. A final book, *The Devil in the Classroom: Hostility in American Education,* was published in the fall of 1985.



James (left) and George Marshall at The Wilderness Society offices in 1985.
GAIL BACKMAN-LOVE

But through it all, he remained an ardent, vigorous, and vocal conservationist. He was a founder, and later a Vice President, of the Natural Resources Defense Council, an organization that has had signal success in the application of legal procedure to environmental problems and considerable influence on the shaping of modern conservation. He also served on the board of the Adirondack Council, devoted to the protection of the country he had known and loved since a boy, for many years before his death.

And The Wilderness Society, in the governing of which he demonstrated a passionate and consistent interest for more than four decades. If he had an environmental coda, it might be discerned in a review he wrote for *The Living Wilderness* in the Autumn-Winter 1960–61 issue. The book at hand was William O. Douglas' *My Wilderness: The Pacific West,* and Marshall took the occasion to make a statement of his own: "If Michaelangelo was right and God created by the touch of his finger, then He created the world by touching the mountain tops. . . . Our great, craggy mountains, snowy even in summer, where the marigolds almost jump from the rocky soil as the snows recede, and where blue lakes, blue skies, and rushing rivers hold the mountains between them as though to show the grace that God bestowed upon these wilds—these take man out of the predatory maelstrom of his cities and the crush of his bureaucracies."

Jim Marshall is out of the crush of it all now—and we are infinitely poorer for his absence.

—T. H. W.

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(D.CO) that would designate 774,000 acres of new wilderness in Colorado. The bill's progress has been stymied by the insistence of two Colorado legislators—Congressman Michael Strang (R.CO) and Senator Bill Armstrong (R.CO)—that the federal government give up any claim to so-called reserved water rights in Colorado wilderness areas. Reserved water rights allow the federal government to help insure that stream flows and lake levels in wilderness are protected. Conservationists cannot accept any proposal that would give up this important wilderness management tool.

White Mountain Reprieve

On July 10, the Forest Service handed a conservationist coalition, including The Wilderness Society, an important victory when it granted their *Amended Request for Stay Pending Appeal* of the White Mountain forest management plan. The conservationists had asked in their Request "that certain particularly sensitive and controversial portions of the White Mountain National Forest Land and Resource Management Plan . . . be stayed pending the completion of the appeal process." In his letter granting the Stay, George M. Leonard, Associate Deputy Chief of the Forest Service, wrote: "We concur with the Regional Forester's recommendations and stay all management practices not consistent with maintaining the existing character of the roadless areas. . . ."

The stay, in effect, temporarily halts timber sales on approximately fifty-five roadless tracts in New Hampshire's 752,000-acre White Mountain Forest, including Wild River, the Kilkenny, and Wildcat Brook, which is now under consideration for Wild & Scenic River status.

"The stay will provide the protection necessary to maintain the precious backcountry values of the White Mountain National Forest while the appeal is pursued," said Laurie Kermish, of the Conservation Law Foundation of New England, co-counsel for the conservationists. "This is one of the most far-reaching stays yet granted in any of the pending forest appeals."

The stay will remain in effect until two other appeals of the White Mountain plan have been decided.

Impact Zones

The U.S. Air Force is planning an Environmental Impact Statement (EIS) on the possible effects of a plan that is likely to include provisions to store, transport across, or launch Small Intercontinental Ballistics Missiles (Small ICBMs or "midget man missiles") on national wildlife refuges, such as Cabeza Prieta in Arizona, and Desert in Nevada. The EIS will "compare, on a regional basis, the environmental impacts expected to result from the deployment of the Small ICBM in one or more of the . . . deployment locations that have been determined to be suitable."

William C. Reffalt, Director of The Society's Refuge Program, expressed concern because of the obviously incompatible character of ICBM deployment with the purposes of a wildlife refuge. "You can be certain we are going to watch this matter very closely," said Reffalt. "Both of those refuges have been proposed for wilderness designation since the mid-1970s. We believe the military departments, with over 10 million acres of reservations, have more than ample space to deploy their systems, build their racetracks, silos, etc."

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Anyone who would like to comment on the plan should write to Lt. Col. Peter Walsh, AFRCE-BMS/DEV, Norton AFB CA 92409-6448, and ask to receive copies of the EIS when it is available.

Bill Reffalt also testified recently before the House and Senate Public Lands Subcommittees on S.2412 and H.R. 1790, bills that would grant "withdrawals" of nearly 8 million acres in Arizona, California, Alaska, New Mexico, and Nevada for up to twenty-five years. (Withdrawals technically remove lands from the application of public land laws and provide a priority purpose for them.) The Society has opposed these bills on several grounds, including the length of the withdrawals and the various provisions that would grant the military departments new jurisdiction over national wildlife refuges in Arizona and Nevada. The Society supports the alternative Nevada Military Withdrawal Bill, H.R. 4351, that retains the prior management relationship on the Desert National Wildlife Range in Nevada and requires the Air Force and Navy to update and extend their EIS coverage and analysis and to seek public review and input.

New Faces and Places

Justice Thomas Berger, Professor of Law at the University of British Columbia, Vancouver, and former British Columbia Supreme Court Justice, became the newest member of The Society's Governing Council last April. Justice Berger is considered one of Canada's foremost advocates of Native rights. In July of 1983, he was invited by the Inuit Circumpolar Conference—an organization of Eskimos from Alaska, Canada, and Greenland, and the World Council of Indigenous People—to head up the Alaska Native Review Commission, whose mission was to investigate the impact that the Alaska Native Claims Settlement Act (ANCSA) has had on Alaska natives. His report on that investigation, *Village Journey,* was published in 1985. Justice Berger is also a sought-after lecturer and the author of "*Northern Frontier, Northern Homeland* (1977).

The Society opened a new field office in Miami to strengthen its support of Florida's comprehensive Save Our Everglades campaign. The director of the new office, James Webb, was Associate Solicitor and Deputy Assistant Secretary of Interior under Secretary Cecil Andrus. Generous grants from the Dunn and Schumann foundations enabled us to launch this new initiative.

Michael Scott, formerly The Society's Southwest Regional Director, and more recently Deputy Director for Conservation at the Washington headquarters, has been appointed the Regional Director for the new Northern Rockies Office (Montana and Wyoming). Tom Robinson will be the Intermountain Regional Director, operating out of the Boise office. Scott will focus his particular attention on Montana forest wilderness, forest planning, the Greater Yellowstone Ecosystem, and BLM wilderness in the two states. The new office, located in Bozeman, Montana, is scheduled to open in October.

The Appropriations Crunch

As Congress ground its way inexorably toward October recess, a number of FY 1987 budget appropriations actions and—and inactions—were of major concern to the conservation community:

The Interior Appropriations Bill (H.R. 5234), passed by the House on July 31, cut $44 million from the administration's proposed budget of $148 million for roadbuilding in the national forests. Although pleased with the House action, conservationists anticipate a much tougher battle in the Senate, where Senator James McClure (R.ID) has added $75 million to the roads budget in the Senate full committee, and is expected to launch a drive on the Senate floor to bring the roadbuilding budget back to the original House figure.

The House bill appropriated $170 million from the Land and Water Conservation Fund for fifty-two federal land acquisitions in twenty-four states. This appropriation is crucial because it is the only source of funds available for acquisition of public lands. Some of the funds will be used to purchase property at Big Cypress, Columbia River Gorge, and the Lower Rio Grande National Wildlife Refuge. In the meantime, conservationists were pleased to note in

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the Senate appropriations bill awaiting floor action that many of the projects were funded at levels similar to those included in the House bill, although the overall Senate-reported figure is about $30 million less than the House-passed bill. It appears that the Land and Water Conservation Fund figure will be close to last year's level—a major victory in this tight fiscal year.

Once again, the conservation community was successful in preventing the Department of the Interior from issuing mineral leases on BLM and Forest Service Wilderness Study Areas. An appropriations rider to that effect was passed by the House and included without opposition in the Senate bill.

Finally, a provision of the House appropriations bill stipulated that the Appropriations Committee staff must investigate the Tongass Timber Supply Fund—the annual federal subsidy to support roading and timber operations in Alaska's Tongass National Forest—and report back within six months with recommendations on how the fund can be reduced. The bill further directs the Forest Service to incorporate those recommendations into its FY '88 budget.

Congress and Overflights

In July, Congressman Tony Coelho (D.CA) introduced H.R. 4430 mandating a three-year Park Service study of the impact aircraft noise is having on national parks. The bill stipulates that up to ten national parks, including Mt. Rushmore National Monument, Cumberland Island National Seashore, Glacier, Yosemite, Hawaii Volcanoes, and Haleakala, be examined to determine what effects aircraft are having on the parks' natural resources, on air quality, and on visitor enjoyment and safety. In addition, the bill restricts flights over Yosemite to above 2,000 feet and sets a minimum altitude of 9,500 feet above sea level for flights over Hawaii's Haleakala. The House bill also prohibits all flights below the rim of the Grand Canyon—long a Wilderness Society goal—and directs the Park Service to make recommendations to the Federal Aviation Administration for further regulation of flights over the Canyon within thirty days of the bill's enactment.

Publishing the Resource

This summer, The Wilderness Society's Resource Planning and Economics Department (RP&E) produced and published two citizen handbooks designed to increase understanding of and participation in the forest planning process. The first, "Biological Diversity in Our National Forests," was conceived by Barry Flamm, chief forester for The Society, and written by The Ecological Society of America. The book details the many facets of biological diversity and its importance to the nation and to the forest planning process and gives case histories of preserving biological diversity through forest planning.

The second publication, "Issues to Raise in a Forest Plan Appeal" (written by The Society's Peter Coppelman and Mike Anderson), serves as a companion document to the earlier handbook, "How to Appeal a Forest Plan." The "Issues" handbook lists major forest planning concerns, relevant law to apply, suggested approaches to take, and references for further research.

The two handbooks bring to six the number of documents that RP&E has offered for use by those interested in the national forest planning process. Others include the aforementioned "How to Appeal a Forest Plan" (1986), which focuses on the steps and procedures of the appeals process; "Protecting Water Quality in the National Forest Planning Process" (1986); "Protecting Roadless Lands in the National Forest Planning Process" (1985); and "National Forest Planning: A Conservationist's Guide" (1983, 2nd ed.).

Copies of all handbooks may be obtained by writing to Deanne Kloepfer, National Forest Action Center, The Wilderness Society.

—PATRICIA BYRNES

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Field Notes

Reports from the Regional Offices

Central Rockies

The comment period on the BLM's Utah wilderness draft environmental impact statement ended on August 15, and Society members from around the country submitted their comments. In Colorado, after flaring briefly at congressional hearings in June, the forest wilderness issue is again dormant, and likely to remain so until the next Congress.

Meanwhile, we had to launch an effort to save the wilderness we've already got, specifically the Maroon Bells-Snowmass Wilderness Area near Aspen. The Bells that give the wilderness its name are perhaps Colorado's most-photographed and best-known peaks. The drainage under attack is Conundrum Creek valley, whose hot springs ten miles inside the wilderness are a popular destination for hikers in summer and ski tourers in winter.

Two years ago, the Forest Service spent nearly $1 million to buy a 472-acre inholding—mining claims patented under the 1872 Mining Law—for inclusion in the wilderness. The mineral rights to the patented claims were under ownership separate from the surface. The Trust for Public Lands arranged the surface purchase for the Forest Service, but was unable to buy the mineral rights. Now the miners who own the mineral rights have demanded a permit for motorized access to quarry what they describe as "rare black marble" from the site about three miles inside the wilderness boundary. The Forest Service is now trying to decide whether it must write a detailed environmental impact statement (EIS) or get by with a less thorough environmental analysis. It is also dithering about whether it has any authority to regulate what the miners do to the surface in pursuit of what they may own beneath it.

Colorado conservationists believe there is no serious question about either decision. The intrusion of motorized vehicles into a wilderness area and a quarrying operation in a narrow stream valley clearly demand a thorough EIS. And the agency has both the duty and the responsibility to manage the surface land in the wilderness area.

We are urging the Forest Service to do an EIS on the proposal, to honestly consider access by pack animal, or, on a very limited basis, helicopter. We are also arguing that the proponents should pay for the environmental studies. The quarrying operation would destroy the wilderness value of a sizable part of the Conundrum Creek valley. It would also render an utter waste of money the taxpayers' recent million-dollar investment to protect those wilderness values.

—Darrell Knuffke
DENVER

Northern Rockies

For the second year in a row, the Montana congressional delegation has failed to produce a wilderness bill that would address the 6 million acres of national forest roadless land in their state. The issue is once again deferred until after the November election.

The final forest plans now become increasingly important in determining the fate of Montana's remaining but rapidly dwindling wild heritage.

The Lewis and Clark National Forest contains some of the wildest of the remaining unprotected wild land in the nation. There are over 400,000 acres of de facto wilderness on the east front of the Rocky Mountains adjacent to the Bob Marshall Wilderness. Even if the Bob Marshall Wilderness did not exist, the Rocky Mountain front alone would comprise one of the finest and largest wilderness areas in the nation.

The Montana Department of Fish, Wildlife and Parks considers this the most important wildlife area in the state. There are large migratory populations of deer and elk, as well as one of the most significant herds of bighorn sheep in the nation. Most importantly, the area contains a large and healthy population of grizzly bears. The Department would like to see this area protected as is: roadless and free of oil and gas activities, as well as the mechanical pursuit of wildlife.

The Wilderness Society, along with conservationists and sportsmen in Montana, have proposed that 317,000 acres along the Rocky Mountain front be designated as wilderness. Unfortunately, the Forest Service has not helped our cause. The Lewis and Clark National Forest has only recommended 51,834 acres for wilderness in its final forest plan.

The Wilderness Society along with many other Montana and national conservation and sportsmen groups have appealed this plan. We will be working very hard over the next few years to ensure that this area is protected in the forest plan and eventually given wilderness classification by Congress.

—Tom Robinson
BOISE

Southeast

Summer in the Southeast has produced a new wilderness bill and a very important appeal of a final national forest management plan.

Both the wilderness legislation and the forest plan appeal focus on the Cherokee National Forest in Tennessee. Congressman James Quillen and John Duncan and Senators Jim Sasser and Albert Gore introduced legislation to create six wilderness areas in the Cherokee that encompass 33,675 acres.

The Wilderness Society and four Tennessee conservation groups have challenged important aspects of the final management plan for the 623,000 acre-Cherokee National Forest. An administrative appeal of the plan has been filed by The Society, the Tennessee Chapter of the Sierra Club, Tennessee Audubon Council, Tennessee Citizens for Wilderness Planning, and the Smoky Mountains Hiking Club. The appeal is intended to force changes in the plan to reduce the amount of timber cutting

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and road building that is proposed; to require that not all timber harvesting be carried out through clearcutting; to protect special areas and potential future wilderness candidate lands; to improve protection for wildlife dependent on old-growth forests such as the black bear; and to begin a phase-out of timber sales that do not recover their costs. The appeal is now before the Chief of the Forest Service.

—Ronald J. Tipton
ATLANTA

Northeast

Summer has found us on the Appalachian Trail (AT). Two significant land protection conflicts have surfaced in recent months: in Sheffield, Massachusetts and on Saddleback Mountain in Maine. Past work by the National Park Service has successfully protected a permanent corridor for about 90 percent of the 2,139 mile-long AT. As we near completion of the vision of Benton MacKaye, one of The Society's founders, of a Maine-to-Georgia trail, it is not surprising that protection efforts have become increasingly intractable. Development pressures are more acute with each passing year, and land prices have risen exponentially.

In Sheffield, the Park Service, following the congressional directive to relocate sections of the AT currently on roads, has encountered fierce opposition from local farmers reluctant to sell their land. Intervention by Congressman Conte and Senator Kennedy resulted in the preparation of several trail relocation options and a recent Sheffield town meeting to discuss the various proposals. The Wilderness Society is currently working with the congressional offices and other local conservation organizations to encourage the town to work cooperatively with the Park Service to develop an off-road route.

On Saddleback Mountain, a ski developer has professed aspirations to develop the area into the "Vail of the East," attracting international visitors. Plans are proceeding despite the remoteness of Saddleback, some of New England's most bitterly cold weather, and multiple bankruptcies of previous owners. Although some development already exists, the expanded condominiums, golf courses, lift lines, and trails would destroy what is considered to be one of the most unique areas of the entire AT. In close association with the Maine Appalachian Trail Club, we are encouraging the Park Service to take a hard line in opposing any new development.

—Sarah Muyskens
BOSTON

California/Nevada

A variety of activities associated with the Bureau of Land Management have been a central focus of the California/Nevada office for the past few months.

Kicking off these efforts in June was a desert activist training seminar sponsored by the California Desert Protection League (of which The Wilderness Society is a member). The well-attended seminar provided an opportunity for The Society and veterans of California Desert protection campaigns to share their experiences with a new generation of desert activists. Sponsors of the seminar hope that one of its results will be to expand the efforts of the conservation community to build the support necessary to ensure passage of the California Desert Protective Act.

The continuing efforts of The Wilderness Society in monitoring the BLM's Interim Management Program in California and Nevada involved the tracking of a number of proposed actions in Wilderness Study Areas (WSAs) in the region. Such actions included ORV races in the Granite Mountains WSA in the California Desert and in the South McCullough WSA in Nevada, mining operations in the Manly Peak WSA in the California Desert and in the Bluebell WSA in Nevada, and proposals by Caltrans to remove hundreds of tons of aggregate from the Newberry Mountains WSA and the Soda Mountains WSA in the California Desert.

A final BLM issue of concern was the July release of the agency's first wilderness management plan in California. The California Wilderness Act of 1984 included a 7,200-acre BLM addition to the Yolla Bolly-Middle Eel Wilderness. The Wilderness Society conducted a full review of the plan, prepared in-depth comments, and worked with the agency and conservationists to create a model BLM wilderness management plan.

—Jay Watson
SAN FRANCISCO

Alaska

Since travel in Alaska is difficult most of the year, I spent much of the summer getting around and learning more about my region. My journeys took me to southeast Alaska where I was once again struck by the magnitude of the destruction being caused by the subsidized timber harvest of the Tongass National Forest.

I also travelled to Washington, D.C., to spend a week encouraging members of Congress to cosponsor the Arctic National Wildlife Refuge Wilderness bill. At last count, we had over fifty-six cosponsors.

Here in Alaska, the oil industry is gearing up their campaign to open the coastal plain to development. I was invited to participate in a Public Policy Forum, along with the Commissioner of the Department of National Resources and a representative from Chevron, to discuss the Arctic Refuge issue. The forum was sponsored by the Young Republicans, was attended by a broad spectrum of the public, and was covered by the media.

—Susan Alexander
ANCHORAGE

Northwest

Some of the recent activity in the Northwest has resulted in satisfying accomplishments: Congress appropriated funds to complete purchasing the ancient cedar grove on Long Island in

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Willapa Bay Refuge and other lands in the Northwest. The Columbia Gorge National Scenic Area bill is close to becoming law. The Wilderness Society has analyzed forest plans for the Deschutes, Okanogan, Wallowa—Whitman, and Wenatchee national forests, and cooperated with other environmentalists to inform the public about each.

The majestic old-growth forests of Washington and Oregon require much of our attention. The Forest Service has issued its draft guide on spotted owl management, a document that largely will determine how much of the remaining old Douglas fir forest will survive in the Pacific Northwest. (The northern spotted owl is the "indicator species" or yardstick by which forest managers measure how well the whole old-growth forest community will survive.) Unfortunately, the Forest Service recommends logging more than half of the old growth in its domain, which would destroy crucial elk and salmon habitat, irreplaceable scientific laboratories, and the soaring natural cathedrals that restore the human spirit.

The public has until November 17 to comment on the document, and all conservationists are urged to share their concerns with the Forest Service and other public leaders. Please write to Forest Service Spotted Owl SEIS, Box 3623, Portland, OR 97208.

—Jean Durning
SEATTLE

Southwest

Legislation is moving in Congress this year that could protect lands in the Southwest administered by the Park Service, the Bureau of Land Management (BLM) and the Fish and Wildlife Service. Conservationists here are anxious to see which of the four separate bills we are working on will make it through the legislative gauntlet before Congress adjourns this fall.

On the BLM front, two bills are pending. The El Malpais National Monument bill has successfully passed the full House, but is temporarily stalled in negotiations among New Mexico's two senators and Congressman Bill Richardson. A bill to establish a National Conservation Area along the San Pedro River in Arizona is moving quickly through the House and has support in the Senate. The extraordinary riparian and wildlife values of the San Pedro will be given lasting protection if the bill as drafted becomes law.

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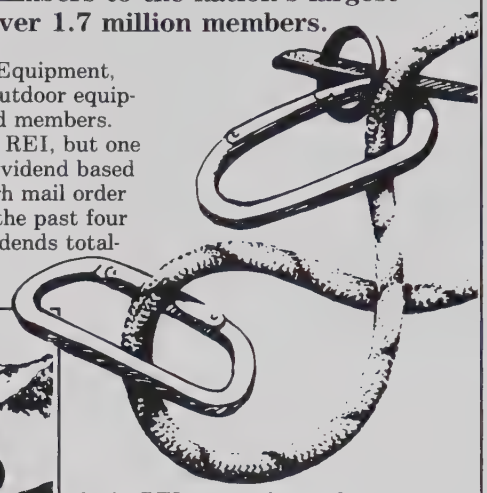

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On the national parks front, Congressmen Mo Udall and John McCain have crafted a provision to ban all aircraft flights below the rim of the Grand Canyon and to force the Park Service and the Federal Aviation Administration (FAA) to take additional action to protect the quiet of the park. The provision was attached to a broader piece of legislation that requires a comprehensive study of the appropriate minimum altitude for aircraft flying over parks.

Finally, there is hope that an agreement can be reached to address a long-standing wilderness proposal for the Cabeza Prieta National Wildlife Refuge in the Sonoran Desert of southwestern Arizona. At a hearing in Washington, D.C., last month, The Wilderness Society proposed addressing the wilderness issue in legislation that would allow the military to continue to use the airspace above the refuge.

—James W. Norton
PHOENIX

A Measure of Fragility

It is not a land that one would normally describe as delicate. Its coast is a peneplain, a stretch of flatness relieved here and there by undulations of tundra that resemble swells on the surface of the sea after a heavy squall. It is exposed and cold, the wind coming down off the ice of the Arctic Ocean as if from the measureless heart of winter. As a backdrop, the peaks and serrated edges of the Brooks Range rise from the rolling foothills like sharply drawn geometric exercises, almost two-dimensional in their clarity. Tumbling out of the mountains, flowing north to the Beaufort Sea or south to join the flow of the great Yukon, the rivers are cold and swift, gravel-bottomed and harsh.

It is a hard place, the Arctic National Wildlife Refuge, a place where things seem stripped to the elemental. Beautiful, yes. Stunningly beautiful. But not delicate.

Yet both the land and the startling abundance of wild creatures that it supports are in fact fragile. The tolerances that govern the viability of existence here are stretched till they nearly hum with tension, and the balance of life is not merely delicate, it is taut and can be easily snapped if subjected to the wrong kind of pressure at the wrong place at the wrong time.

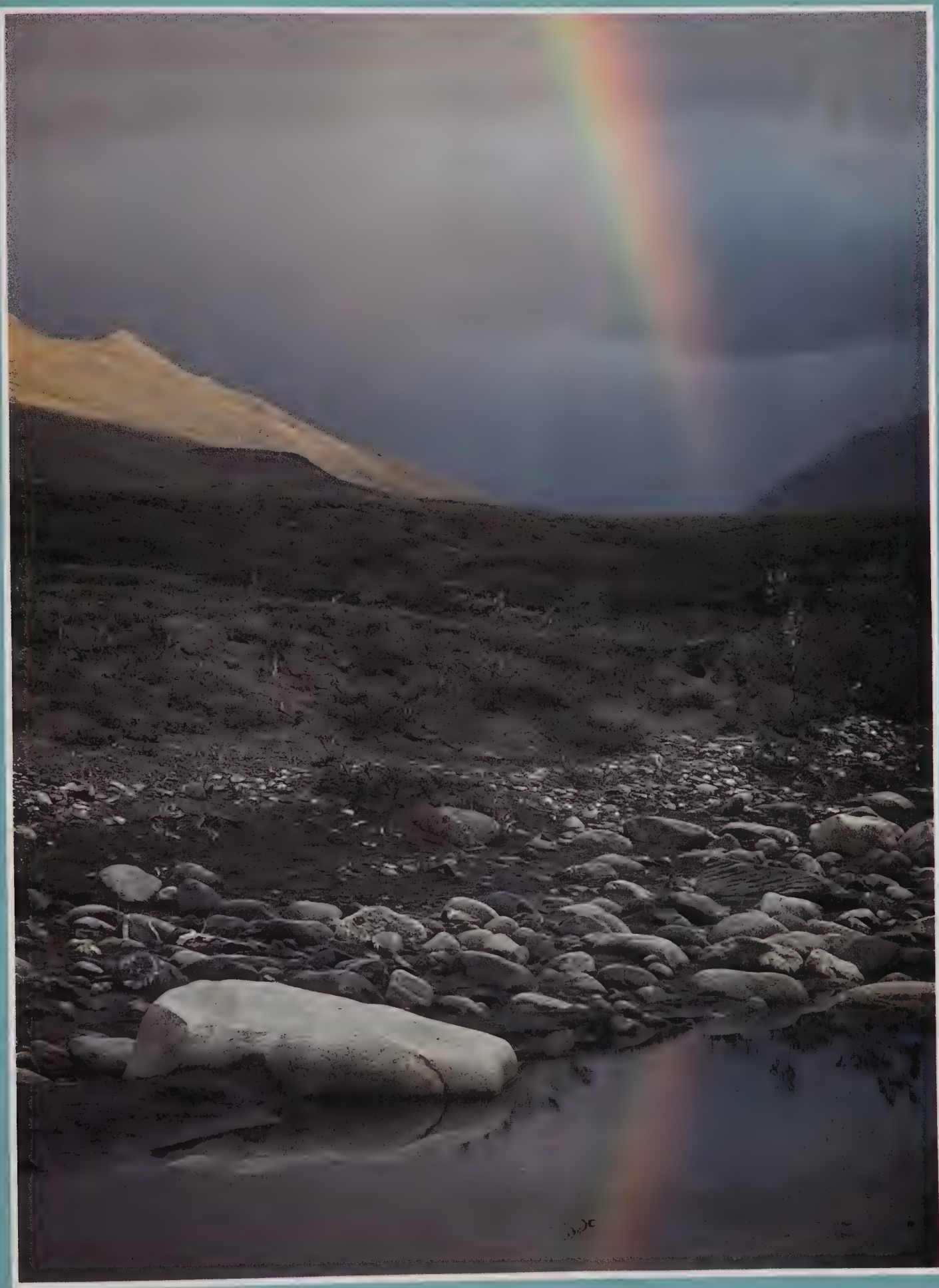
The kind of pressure, say, exerted by an oil or gas drilling rig, together with its ancillary equipment, crew, outbuildings, vehicles, roads, noise, and litter. Put all that down on a patch of tundra that heretofore has known no disturbance greater than the clattering hooves of caribou, then multiply the impact fifty or sixty or a hundred times in the heart of the coastal plain east of the Canning River, and you do not have just pressure, you have environmental catastrophe on your hands.

Opposite page: Rainbow in the Big North—Arctic National Wildlife Refuge. GALEN ROWELL/MOUNTAIN LIGHT

That, at least, is what many conservationists fear as the oil and gas industry, many Alaskan politicians, and too many federal officials contemplate the Arctic Refuge with visions of another Prudhoe Bay coloring their dreams. These people would like to see the refuge opened up to more vigorous exploration for oil and gas, and—if and when such are found—full and expeditious development of those resources. Conservationists say that expanded exploration is neither necessary nor compatible with the primary purpose of the refuge, which is the health and well-being of wildlife, and that full development would be calamitous. The conservationists want the vulnerable coastal plain of the refuge declared a wilderness area.

Does the conflict sound familiar? It should. It is an old one by now. But, as the articles in this special issue of *Wilderness* illustrate, rarely have the lines of conflict been drawn with greater exactitude, rarely have the stakes been so high, and rarely has conflict erupted in a landscape more powerful than the fragile magnificence that lies at the top of the world.

—T. H. Watkins



An overview

The Floor of Creation

BY DONALD DALE JACKSON

The word-picture that Margaret Murie painted of the scene she beheld from atop a nameless mountain in northeastern Alaska thirty years ago was an epiphany, a revelation of the essence of wilderness. She and her husband, Olaus, then-director of The Wilderness Society, had climbed the peak under a high arctic sun, and when they reached the summit she lay on a blanket of moss and heather and squinted at the vista beyond the Sheenjek Valley to the west and north:

"The mountains made an unearthly beautiful frieze against the blue," she wrote, "numberless, snowy, streaked with dark rocks, various in shape—shoulders, domes, spires, and castles—and cliffs and screes on the slopes reaching to the darkness of the belt of forest. And then the broad valley, the winding Sheenjek, the countless lakes. The place, the scene, the breeze, the birdsong, the fragrance of myriad brave burgeoning mosses and flowers—all blend into one clear entity, one jewel. It is the arctic in its unbelievably accelerated summer life. It is also the personal well-being purchased by striving, by lifting and setting down your legs, over and over, through the muskeg, up the slopes, gaining the summit—man using himself."

"Mardy" Murie is eighty-four now, and it has been eleven years since she last camped amid the sublime wonders of the area she and her husband helped establish as the Arctic National Wildlife Range (considerably enlarged, it is now a national wildlife refuge). But her feeling for the place remains as strong as the memories she cherishes. "There were no human footprints there, it was absolutely untouched as a natural entity," she recalled recently. "We felt like privileged onlookers. The animals seemed fearless, they hadn't seen people before. The attraction is the size, the sheer immensity of territory."

The 19 million-acre Arctic National Wildlife Refuge (ANWR) forms a rough-sided square in Alaska's northeast corner, with the Canadian border on the east, the Canning River on the west, the Beaufort Sea to the north, and Yukon Flats National Wildlife Refuge to the south. The peaks and glaciers of the eastern Brooks Range bisect the refuge and separate the subarctic boreal forest on the south slopes of the mountains from the rolling, treeless tundra on the coastal plain to the north. The dramatic transition from range to tundra is one of ANWR's singular glories. John Milton, who hiked across the range with two companions in 1967, described the impact of the transformation on a pedestrian: "As we crossed over the saddle a new world unfolded. Two snow-decked mountains guarded the entrance to the flat tundra. Mile after mile of undulating brown and green plains bordered by snowy peaks lay in the soft afternoon sun. And behind us all was still a wintry chaos. Far, far away beyond the foothills, we could see the level vastness of the purple tundra stretching away northwards."

The refuge's combination of mountains, foothills, valleys, and tundra is unique, providing home range for a wide variety of creatures—caribou and moose and wolves, foxes and wolverines and grizzlies, gyrfalcons and ptarmigan and migrating snow geese, muskox and Dall sheep and many other animals that have evolved strategies for surviving the long and punishing arctic winter. ANWR itself, ironically, has been engaged in another kind of battle for survival ever since it was given federal protection in 1960.

Conservationists committed to preserving the integrity of the refuge have evolved their own strategies for combatting the mounting pressures to open ANWR for the exploration and development of its oil and gas resources. Many of the conservation strategies have succeeded, most notably in the Alaska National Interest Lands Conservation Act (ANILCA) of 1980, which doubled the size of the range, declared it a refuge, and classified nearly half its total acreage as wilderness. But others have not—as evidenced by the provision in the same law that opened the 1.5 million-acre coastal plain to extensive oil and gas exploration.

The refuge is now approaching another major battle in

Dwarf fireweed in bloom near the Hulahula River. Previous page: Looking toward the Sadlerochit Mountains on the North Slope. ABOVE GALEN ROWELL/MOUNTAIN LIGHT, PREVIOUS PAGE LARRY RICE

Congress over its future, with the stakes higher than ever. At issue is whether the oil and gas exploration that was conducted on the tundra in the winters of 1984 and 1985 will be permitted to continue or perhaps to expand, or whether it will be halted before more damage is done. With this confrontation looming on the northern horizon, it seems appropriate to take a look at the history of this exotic and beleaguered preserve, which has become one of today's principal conservation battlefields.

The British naval explorer Sir John Franklin—who would later become the most celebrated missing person in the annals of the far north when he vanished while searching for the Northwest Passage—led the first party of white visitors in 1826 to the area now included in the refuge. Like most later intruders, Franklin grumbled about mosquitoes and the unpredictable summer weather, but he was also an astute observer, noting among other phenomena the willows and other plants that managed to grow in the 18-inch-deep soil atop the tundra permafrost.

The next outsiders to startle the Inupiat Eskimos who roamed the arctic coast were scouts for the Hudson's Bay Company, followed in the 1850s by whalers who deliberately locked their ships in the sea ice so they would be in place when the ice cleared the following summer. Hawaiian whalers, perhaps seized by an understandable spasm of homesickness, are credited with naming the Hulahula River on the North Slope. A few prospectors drifted into the region in the wash of the Klondike gold rush at the turn of the century, and government geologists began turning up soon afterward, but for the most part the land remained unmarked by man and subject only to its own unyielding seasonal rhythms.

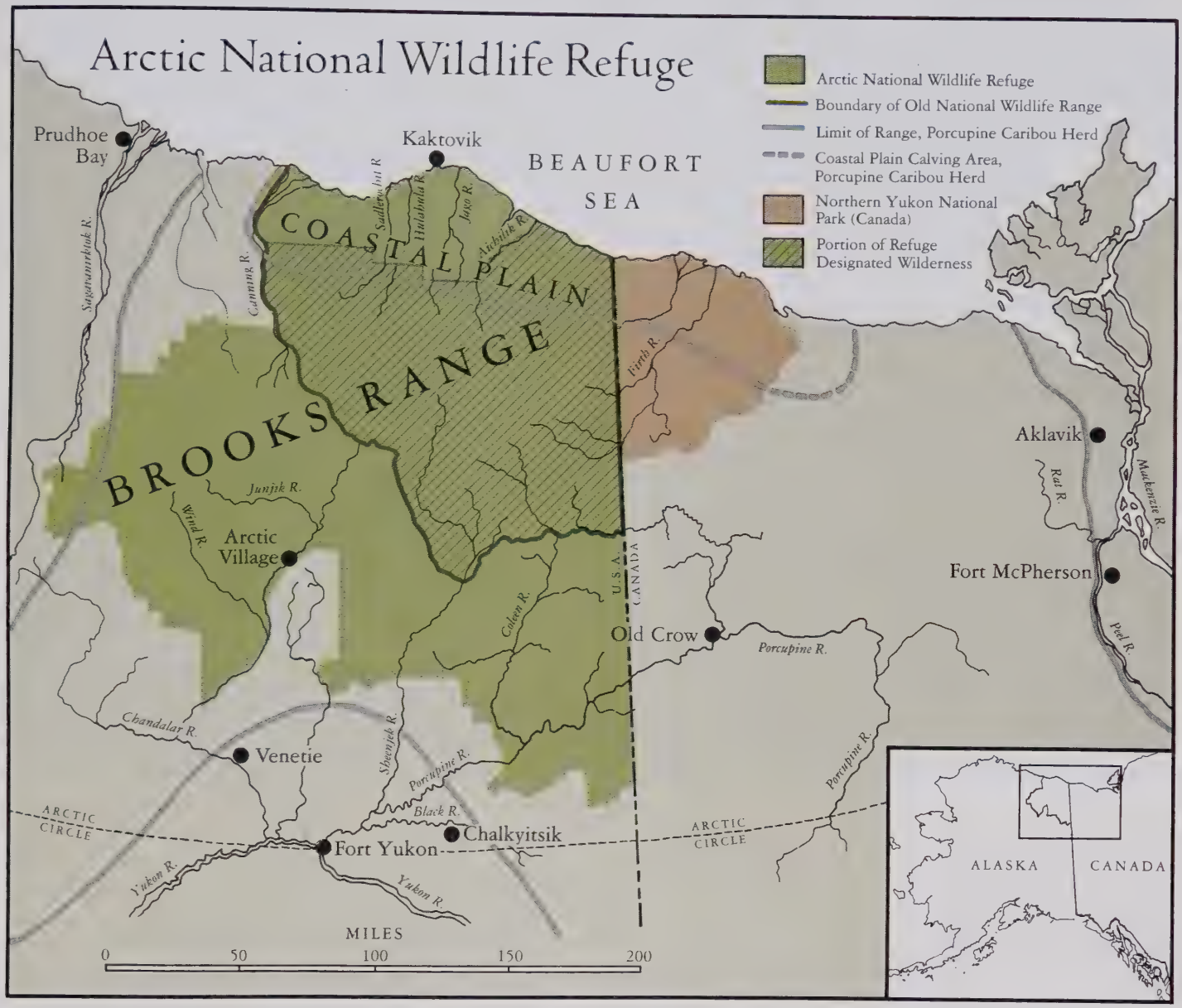
The great conservationist Robert Marshall was the first American to look at the Brooks Range and its daunting environs and see a national treasure worthy of preservation for its own sake. Though he never reached the country now incorporated in the refuge, Marshall eloquently described the kindred landscape farther west, where "all around us were gorges thousands of feet deep, great snowbanks, bright green valleys and gaily colored rocks. All was peace," he wrote, "and strength and immensity and coordination and freedom." In 1938, Marshall advanced the then-heretical notion that "in the name of a balanced use of American resources" all of Alaska north of the Yukon River should be a wilderness closed to the drills and engines of civilization.

Olaus Murie, who had been smitten by the Brooks Range country since his first forays there as a field biologist in the 1920s, led the carefully orchestrated campaign that ultimately transformed Marshall's vision into the creation of the Arctic Wildlife Range. Mardy Murie recalls that it was Joe Flakne of the Arctic Institute of North America who first suggested the idea to her husband in 1950. George Collins and Lowell Sumner of the National Park Service, working on an official recreational survey of Alaska, were zeroing in on the northeast corner as a potential park at about the same time. Collins and Sumner focussed on the northeast both because of its magnificent natural features and because much of northwestern Alaska was already set aside as a naval petroleum reserve. In addition, a U.S. Geological Survey official had advised them, ironically, in light of subsequent events, that a conflict with future oil development was less likely east of the Canning River.

Olaus Murie kept close tabs on the work of Collins and Sumner and also kept in touch with A. Starker Leopold and F. Fraser Darling, who nominated the eastern Brooks Range as an "ideal Arctic wilderness area" and a site for "long-term ecological studies of Arctic flora and fauna" in 1953. Collins and Sumner weighed in with a proposal for an Arctic International Park, combining parts of northeast Alaska and Canada's Yukon Territory a year later, but the Park Service wasn't interested, primarily because of the area's remoteness. Murie was ready with a counterproposal: let the Bureau of Sport Fisheries and Wildlife, later changed to U.S. Fish and Wildlife Service (FWS), run it as a wildlife range; that way, he believed, it would have "the least development."

On their expedition to the Sheenjek Valley south of the Brooks Range in 1956, the Muries gathered biological data along with ammunition for the campaign to preserve an area of about 9 million acres. Wildlife biologist George Schaller was in their party, and U.S. Supreme Court Justice William Douglas and his wife, Mercedes, joined them at their camp on Lobo Lake, named for a lone wolf who appeared one day and eyed them without much curiosity. They snapped pictures, took notes on the wildlife they saw, and revelled in what Olaus later described as "the freedom in all directions, to the horizon and beyond."

The following year they campaigned for the proposed wildlife range in Alaskan cities, gaining support from the



GRAPHICS BY WILMA FREY

Fairbanks *Daily News-Miner* and several conservation-minded groups. They also heard from Alaskans vigorously opposed to the withdrawal of more land by the government; one such citizen particularly objected to schemes "dreamed up by sentimentalists in the states." Late in 1957 the Muries gathered up their slides and made a formal presentation to Interior Secretary Fred Seaton and what Mardy Murie describes as "a roomful of government people" in Washington.

Congressional action to establish the range, though successful in the House, was blocked in the Senate by Alaska senators Bob Bartlett and Ernest Gruening. The forty-ninth state's politicians, in the first salvo of what would become a steady fusillade of opposition, assailed the proposed withdrawal as a threat to the state's autonomy and economic interest. In December 1960, faced with a congressional stalemate and the imminent arrival of a new administration in Washington, a lame-duck Seaton finally signed Public Land Order 22141, creating the 8.9-million-acre range for "the purpose of preserving unique wildlife, wilderness, and recreational values. . . ." The order prohibited surface mining but permitted mineral leasing under an elaborate procedure that required the consent of the Interior Secretary. The Muries had realized their great dream—on paper, at least—but more troubles waited beyond the next ridge.

The animals that now acquired the status of wards of the government—though hunting and trapping approved by the Secretary were and are permitted—are as distinctive and spectacular as their habitat. Enormous numbers of caribou—current estimates place the size of the great Porcupine herd at more than 150,000—move across the refuge each May from their winter grounds in Canada in the watershed of the Porcupine River and south of the Brooks Range to the coastal plain, where the calves are born. Polar bears den along the coast. Muskox, eliminated by hunters in the nineteenth century, were reintroduced in 1969 and are once again foraging in the tundra's winter snow—and flourishing. Skittish Dall sheep roam the crags and cliffs of

unnamed mountains. Elusive wolverines and lynx patrol the dwarf birch and spruce woodlands on the South Slope. Averill Thayer, who managed the refuge in the 1970s, estimates that half of the resident wildlife have never confronted a human being. Most, like the wolf who nosed around the Muries' camp in 1956, seem to take the encounter in stride when they do.

It is in the cruelly short arctic summer, of course, that the refuge comes most vividly alive with the sight and sound of animals. Mardy Murie's diary entry for a day in early June recorded a band of fifty caribou, "ptarmigan soaring and cluck-clucking and giving their ratchety call, tree sparrows so close and unafraid, cliff swallows hurrying by, Wilson snipe and yellow-legs calling, gray-cheeked thrushes singing."

The most thrilling wildlife spectacle in this realm of outsized wonders is the passage of the great milling and drifting caribou bands, the beasts an Alaskan poet has called "the gray shepherds of the tundra." Wilbur Mills looked out from his camp on the Kongakut River one July day and saw them coming toward him—"a tight, seething gray mass so dense I could not see the ground beneath it. I heard the approaching thunder of their hooves pounding the tundra. It was more than sound."

Mills watched entranced as the herd crossed a braided riverbed, the calves scrambling up a two-foot-high block of overflow ice while lone cows eyed them from the bank. Soon "caribou were coming toward me along an unbroken front perhaps a quarter of a mile wide. Their clicking hooves chattered in the air like a thousand castanets. The air was saturated with the energy of sound. The herd enveloped me. Cows and calves, and bulls with long, velvet-coated antlers reaching high above their heads, rushed by a few yards away as if I were not there."

The harsh arctic environment with its barriers to many life forms makes for a relatively simple ecosystem with fewer species, though there may be high densities of individuals within a species, as with caribou, lemmings, and mosquitoes. Nature has equipped arctic creatures with the tools of survival: muskox fur provides eight times the warmth of wool; ptarmigan plumage changes from mottled brown in summer to an equally protective white in winter; bears and ground squirrels hibernate through the long winter night; lemmings and arctic foxes grow heavier coats than their counterparts farther south. As Barry Lopez observes in his acclaimed book *Arctic Dreams*, "the long winter and short summer constitute a temporal pattern around which life carefully arranges itself." In summer most animals maintain a 24-hour daily cycle of activity and repose despite the relentless arctic sunlight.

But it is the human interlopers who feel the effect of the arctic most acutely, in ways both stirring and unsettling. "It is not that the land is simply beautiful but that it is powerful," Lopez writes. "Its power derives from the tension between its obvious beauty and its capacity to take life. Its power flows into the mind from a realization of how darkness and light are bound together within it, and the feeling that this is the floor of creation."

Seaton's administrative order creating the Arctic Range was not enough to get it operating. Congress had to appropriate funds for the Fish and Wildlife Service to run it, and a still-irritated Senator Gruening managed to block funding until the voters retired him in 1968. The Alaskans also pressed Stewart Udall, the new Secretary of the Interior, to revoke Seaton's order and turn the land over to the state, which Udall declined to do. He also refused to permit mineral leasing on the range, although a few leases straddling the Canning River on the western boundary were granted. The leases quietly expired in the 1970s.

The 1968 discovery of the Prudhoe Bay oilfield ignited an era of wrangling and political maneuvering involving the range and other federal land in Alaska that persisted until passage of ANILCA twelve years later. The scene shifted from the far north, where Thayer ran the enormous area with a minimal staff ("I got an assistant after a year, then another one a couple of years later," he recalls laconically) and a federal presence he describes as "custodial," to the corridors of power in Washington. Conservationists scored a major breakthrough when they added an amendment to the 1971 Alaska Native Claims Settlement Act (ANCSA) permitting the withdrawal of 80 million acres of public land in the state for study of their suitability as protected reserves. Interior Secretary Rogers C. B. Morton, charged with recommending the areas to be withdrawn, continued Udall's policy of denying applications by oil companies for leases on the range; requests for permits allowing the intrusion of seismic exploration crews and their heavy vehicles were likewise rejected, despite what Averill Thayer describes as "a lot of footwork behind the scenes." The only oil exploration permitted in the area during the 1970s took the form of "surficial" studies of exposed rocks by helicopter-borne crews of geologists.

The Wilderness Society and other conservation groups pushed for a southern extension of the range in the early 1970s and fought a proposed gas pipeline that would cross the refuge on its way from Prudhoe Bay to Canada. The arctic was becoming less remote all the time; it was now an environmental killing-ground where the unending conflict between conservation and development was boiling. A wilderness study of the range completed in 1973 found all but about 70,000 of the 9 million acres suitable for wilderness designation. David Cline, who worked on the wilderness survey for the FWS and now heads the National Audubon Society's Alaska office, says that it was one of his most inspiring assignments as well as one of the easiest: the refuge was the very definition of wilderness.

Within Interior, meanwhile, an interagency Alaska Planning Group led by Theodor Swem, a veteran National Park Service planner who now sits on The Governing Council of The Wilderness Society, hammered out a proposal for adding 3.7 million acres to the range. Conservationists, whose hopes for swift wilderness designation flickered amid the infighting among various factions in the Nixon administration, backed a bill that would have enlarged the range by about 7 million acres. Since ANCSA had

A caribou feeds while technology pauses; a scene near Prudhoe Bay, Alaska. BETTY JOHANNSEN/ALASKAPHOTO

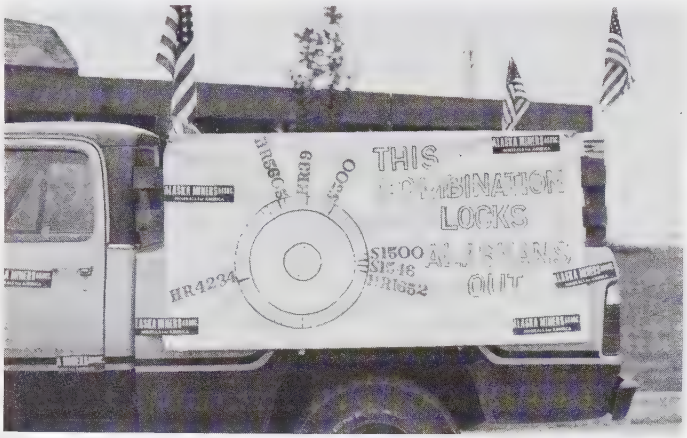
set a 1978 deadline for congressional action on Alaska lands, there was no pressure for an immediate decision, and for the next few years the debate over the future of the range and other Alaska land issues subsided to a background murmur.

Conservationists took heart when the idea of establishing a companion range on the Canadian side of the border, dormant since the 1950s, gathered momentum in the 1970s. A call for a 9 million-acre combined wildlife range emerged from a 1970 conference at Whitehorse in Yukon Territory. The most conspicuous beneficiaries of such a range would have been the Porcupine caribou herd, which regularly drifted back and forth across the border. In 1977, the proposal won the important backing of Justice Thomas Berger, acting as a special commissioner for the Canadian government. Berger not only endorsed a Yukon preserve but recommended the exclusion of a pipeline in the territory, which effectively quashed the projected gas conduit. In 1978, Canada announced plans for a major park adjoining the range, and six years later the 3 million-acre Northern Yukon National Park, with oil development barred by law and wilderness preservation a primary goal, came into being.

Back in Washington, the initial skirmishing in what would become one of the most complex, protracted, and agonizing battles in the history of American conservation began in 1977. Conservationists sailed into the fray united and organized as never before under the banner of the newly formed Alaska Coalition, led by the Sierra Club's Charles M. Clusen (now a vice president of The Wilderness Society). They were emboldened by the active support of the Carter administration and the commitment of a large, energetic and politically savvy lobbying force.

Early in 1977, Representative Morris Udall introduced H. R. 39, calling for 115 million Alaskan acres to be set aside as parks and refuges, much of it as wilderness under the provisions of the Wilderness Act of 1964. After sixteen months of hearings, committee wrangling, and intensive lobbying by both the coalition and the pro-development opposition, the bill passed the House by a wide margin in May 1978. Among its other stipulations, H. R. 39 added 9.9 million acres to the range and conferred wilderness status on most of it.

Senate approval was a thornier proposition. The Senate Energy Committee, with Alaska Senator Ted Stevens sitting in, shaved the addition to 5.7 million acres and rejected wilderness protection, in spite of testimony from people like Averill Thayer, who described the "steep and appalling bluffs" in the Brooks Range and the rare and fragile archeological sites on the arctic coast left behind by the first people to cross from Asia to North America. When Senate and House conferees could not work out a compromise on this and other parts of the Alaska bill before the 1978 session ended, President Jimmy Carter did an extraordinary thing: to protect Alaskan wildlands until Congress could be moved to act, he utilized the



Combinations: The lines of conflict were clearly drawn regarding all versions of what became ANILCA. Top: an opinion in Anchorage; bottom: an opinion in Denver.

TOP: WILDERNESS SOCIETY COLLECTION; BOTTOM: JAY COGGESHALL/WILDERNESS SOCIETY COLLECTION

Antiquities Act of 1906 to create 56 million acres of national monuments, ordered the Secretary of Agriculture to withdraw from public entry 11 million acres of Tongass and Chugach national forests, and directed the Secretary of the Interior to designate 40 million acres as wildlife refuges under stipulations provided by the Federal Land Policy and Management Act of 1976.

The battle resumed in 1979 when Udall and Representative John Seiberling presented an even stronger Alaska conservation bill, which the House Interior Committee rejected in favor of an industry-backed alternative by one vote. The industry bill included an ominous provision mandating oil and gas exploration on the range's coastal plain, which, the industry fervently hoped, would harbor a bonanza comparable to the strike in Prudhoe Bay.

The conservation momentum accelerated when the House Rules Committee permitted Udall and Representative John Anderson to introduce a substitute bill on the floor, and in May of 1979 Udall's bill won a lopsided victory in the House. A jubilant Udall ascribed the triumph to the "tremendous, sophisticated grass-roots operation" mounted by the Alaska Coalition.

Once again it was up to the Senate, and once again Alaska's senators fought to reverse the conservation tide. Senators Ted Stevens and Mike Gravel blocked action through 1979 and into mid-1980, when a compromise was at last stitched together. The compromise protected 103 million acres of federal lands in Alaska, including a 9 million-acre addition to the range, whose classification was now officially changed to the Arctic National Wildlife Refuge. Eight million acres, the bulk of the original range, came under wilderness protection.

But for ANWR the price of the compromise, which the full Senate passed in August 1980, was steep: oil and gas exploration would be mandated on the coastal plain, the home of summering caribou, denning polar bears, and musk ox who live there year-round. Udall waited until the result of the 1980 elections were in before he agreed to accept the Senate bill, which the House then endorsed in November. In one of his last official acts, President Carter signed the Alaska National Interest Lands Conservation Act—ANILCA—on December 2, 1980.

The conservation forces felt that ANILCA, as John Seiberling said, represented "about 85 percent of what we had hoped to achieve," but they also recognized that the incoming Reagan administration stood squarely on the side of development. Interior Secretary James Watt quickly confirmed their apprehensions in a series of moves that posed new threats to ANWR. Watt suspended talks with Canada aimed at an international agreement for protection of the Porcupine caribou herd. He proclaimed a "good neighbor policy" with Alaska that transferred most responsibility for wildlife management on ANWR and other refuges to the state. In a maneuver later nullified by a federal court, he tried to shift the job of drafting the guidelines for oil and gas exploration—including analyses of impacts on wildlife—from the Fish and Wildlife Service to the more development-minded U. S. Geological Survey, an agency, conservationists complained, with neither interest nor expertise in wildlife matters. He also advanced the deadlines for FWS researchers preparing baseline wildlife studies under ANILCA—which, critics said, left inadequate time for meaningful research.

A key provision in the law for ANWR is Section 1002, which was designed to insure that petroleum exploration would be conducted with minimal harm to the coastal plain and its wildlife. The Interior Department was given two years to fashion guidelines for the exploration crews and until September of this year to report to Congress on the crews' findings and to make recommendations on further exploration or development. The guidelines that eventually emerged permitted seismic exploration, which involves either the detonation of explosive charges in shallow drill holes or the use of heavy cat-train vehicles to vibrate the earth ("thumper trucks") so that seismic readings may be taken. The environmental safeguards included restricting seismic testing to the winter months, avoiding areas where wildlife congregate, mandating a minimum snow cover requirement to protect vegetation, and assigning FWS monitors to keep tabs on the crews' compliance.

Seismic tests on the coastal plain began in January 1984, and disputes between the exploration crews and FWS monitors erupted soon afterward. The most heated run-ins centered on the service's rule that a six-inch snow base was essential to protect the tundra plants that sustain many of the resident animals. It happened that snowfall in the winter of 1984 was unusually light, and the rumbling heavy-duty vehicles supporting the "shot-hole" drilling crews (the thumper trucks took over in 1985) sometimes churned into the vegetation and shallow soil layer atop the permafrost. This kind of impact can cause "thermokarsting," or a melting of the ground ice during the summer, leading to local settling, sinks, and ravines. It can take decades for damaged areas to return to normal, and sometimes the fragile tundra vegetation never does recover. "When we suggested that they change their routes we got resistance, they'd try to cut corners," says a refuge employe who prefers to remain nameless. "It wound up that we really didn't enforce the six-inch guideline, and eventually we saw that it didn't matter anyway—six inches wasn't enough to protect the soil."

Another problem was essentially political: the field monitors got little backup from headquarters. "Once the decision was made to let vehicles in—they could have flown in on helicopters, but that was regarded as too dangerous in winter—damage was inevitable," says another anonymous refuge staffer. "The monitors were told that they couldn't stop anything unless damage had occurred. In other words, they couldn't try to prevent it. The mistake was going in at all when the snow cover was so poor. The higher-ups were worried that pressure would build up if we interfered with the crews."

People who have seen the plain from the air since the exploration work of 1984 and 1985 describe a crisscrossing grid of lines on the tundra, depressions in the earth caused by the lumbering vehicles. "On the ground they look like shadows," says a person who has visited the plain. Averill Thayer, who was there in the summer of 1984, noted with his expert's eye that the vehicles often clipped the brown tip off green tundra sedge. "It looks greener now," he says. "If you didn't know better you'd think it had been fertilized. It will be 10 years before we can evaluate how much damage was done." One refuge worker, rating the vegetative damage as "minimal to moderate," maintains that most of the plants will recover in that time. Conservationists are not so certain.

Refuge staffers and other observers do agree that the direct impact of the exploration work on the plain's wildlife has thus far been minimal. FWS monitors believe that one female polar bear either lost or abandoned her cub when she was disturbed by thumper trucks, and a report from the coastal village of Kaktovik indicated that the fox population on the tundra had apparently declined, at least while crews were out working. Other animals, including grizzly bears, have actually been killed or injured during the intensive baseline surveys. Refuge workers say that one major—though less dramatic—consequence of all this is the relative neglect of wildlife on the remainder of ANWR; the available money and manpower have been poured onto the plain.

Helicopter-borne crews conducting surface geological tests have continued to operate in all parts of the refuge, including the wilderness sector. "We refused to let copters in the wilderness area at first," says a refuge hand, "but the companies appealed and got an okay from Washington." The choppers disturb nesting raptors and sometimes stampede mountain sheep. "You can't go an hour in some places without hearing a motor in the summer," the staffer

An exploratory well just east of Kaktovik and on the edge of the refuge's coastal plain; the well proved unpromising and has since been abandoned. SUSAN ALEXANDER

adds. "They justify it as research," says the Audubon Society's David Cline, "but who knows what they're looking for? Some of the oil companies have mineral subsidiaries. If they find other metals that could put more pressure on the refuge."

The results of the seismic tests and the contents of the report the Interior Department is obliged to deliver to Congress are still officially top-secret, but the hints that have trickled out so far indicate that geological formations have been found that are capable of harboring significant deposits of oil and gas; how rich they may or may not be is anybody's guess. "It's still mostly rumor," says Susan Alexander, The Wilderness Society's Alaska Regional Director, "but I got a cold feeling when I talked to a state man about it. He was almost salivating at the thought of what's there." One major "hot spot" is apparently along the Jago River 15 to 30 miles southeast of Kaktovik, an area the caribou use as a calving ground. "It proves my theory that wildlife have an affinity for oil and gas," Alexander says wryly. Randy Snodgrass, The Society's director of Alaska programs, is downright cynical about it. "The fact is," he says, " no matter what the real potential may be, the Reagan administration and its supporters are going to make it sound as if billions and billions of barrels are at stake. They want oil and gas development in there, and they're willing to use any means to get it—including blatant exaggeration."

Some conservationists believe that the current decline in oil prices will help protect the refuge from further intrusions. Companies working the North Slope have recently cut back some of their operations and pared down crews. But Cline and others see this as a short-term phenomenon. "They figure prices will go back up," he says, "and I think they'll push now for more exploration. They see this as their hottest prospect, and they have a friendly administration." The expectation is that the oil companies and the Interior Department will propose exploratory drilling as a next step. "They'll say the seismic tests aren't conclusive," says William C. Reffalt, director of refuge programs for The Society. "They'll push to drill test wells, and that would put them one step from their Garden of Eden—leasing permits."

Many wildlife experts believe that the effect of an exploratory drilling complex on caribou would be calamitous. The animals would be forced to find alternate migratory routes or forego the use of sizeable areas of their historic range—including calving grounds. In addition, their food base would diminish, they could become more vulnerable to predators, and the population would probably decline. "Exploratory wells would be worse on them than a producing oilfield in some ways," Thayer says. "It requires more men and equipment, air strips and roads and gravel. If anything is incompatible with the purpose of the refuge that's it." Test wells would also destroy, irretrievably, the wilderness character of the plain.

The pro-development, anti-wilderness cast of the Interior Department hierarchy, in the opinion of at least one refuge worker, makes preserving ANWR's natural integrity even more difficult. "They've shifted the burden of proof, like they did with the [FWS] monitors," this staffer says. "It's like NASA and the shuttle disaster, the presumption is in favor of going ahead. We have to prove why they *shouldn't* drill. It amounts to proving a negative. The burden should be on them."

A few rays of sunlight are visible amid the clouds. Canadian interest in an international agreement to protect the Porcupine caribou herd remains high, and the effort on the U. S. side, while hobbled by apathy in Washington, gained ground when the state of Alaska recently endorsed a protection proposal backed by Alaskan environmentalists. State support for the idea may prod the administration into signing a treaty.

Conservationists have also been heartened by the failure of the Interior Department to consummate a malodorous "megatrade" involving a deal between the government and native corporations to exchange mineral rights on the refuge for native-owned lands in other Alaskan preserves. Alaskan environmentalists believe that the trade, which could open ANWR to oil development on native holdings, foundered due to native disenchantment with the government offer, but Interior Department operatives have not yet abandoned it.

Congressmen Udall, Seiberling, and James Jeffords of Vermont have meanwhile introduced a bill that would give the coastal plain the protection it deserves by making it part of the national wilderness system. The Wilderness Society is urging its members to ask their congressmen to cosponsor H. R. 4922, the Arctic National Wildlife Refuge Wilderness Act of 1986.

The battle to save this wild, multifaceted, and still largely unspoiled wonderland is clearly far from over, but no one in the conservation community doubts that the prize is worth the struggle. "It's a magical place," Susan Alexander says, "with satisfactions deeper and fuller than anyplace else I've ever been. You get a sense of the earth at work, you see cut banks that will be rivers—you see it happening." Adds Averill Thayer, "The visual impact of development on the plain would be disastrous, there's no other word. It's so open there, you can see so far, sound carries so far. Everything there is so clearly exposed. An oilfield would destroy that."

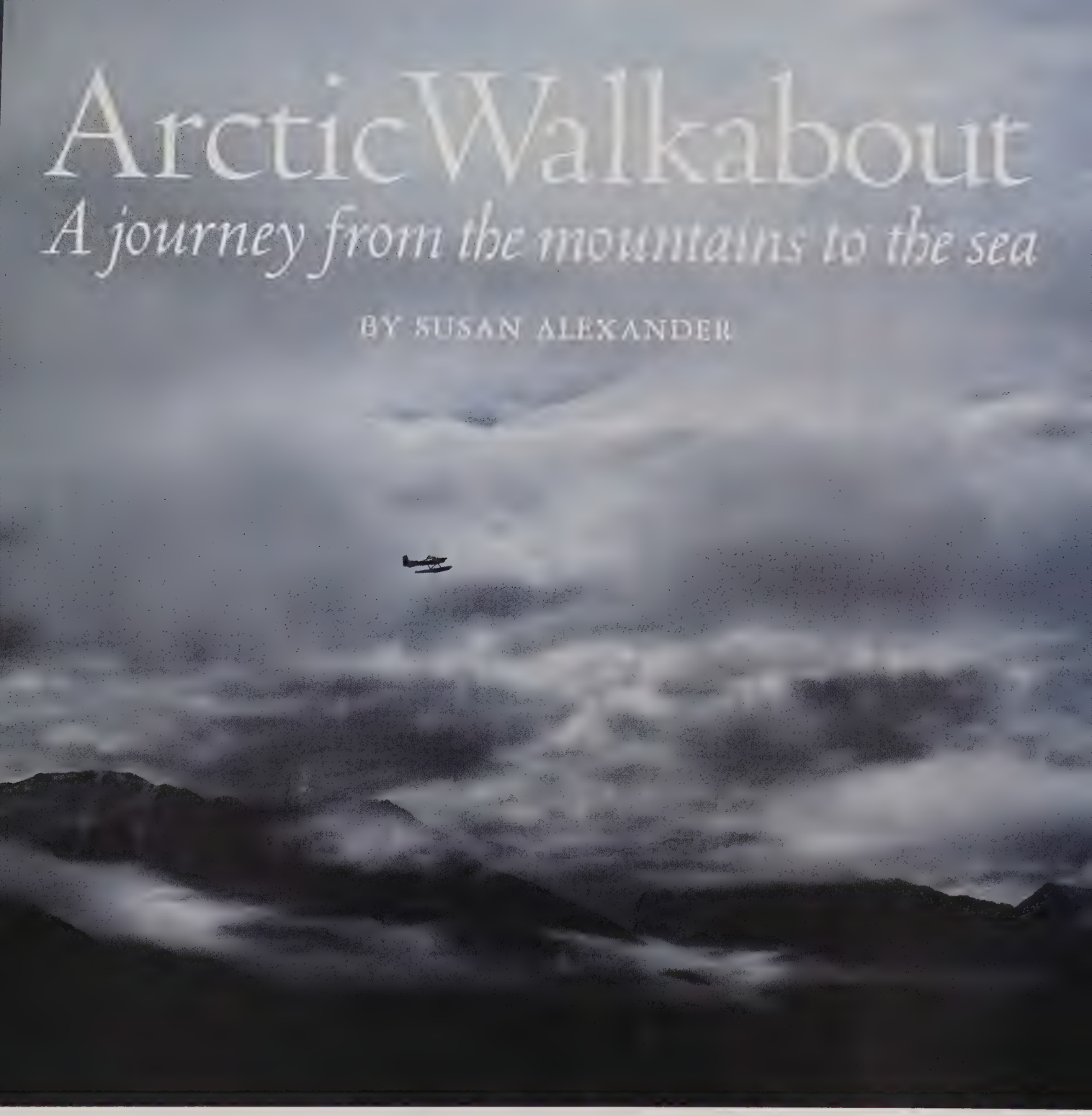
Time often seems to hang suspended in the arctic, and man's scuffling, cut-and-run business seems petty and transitory. It's not, of course; on the land it never is—time is short and the long-term danger is real. The ANWR coastal plain is a mountain-fringed marvel that most of us will never see, but we cherish the knowledge that it is there, intact and magnificent, and we are determined to make sure that it always will be. The "floor of creation" surely deserves no less from us.

Donald Dale Jackson is a former UPI reporter and was on the staff of *Life* magazine. He has written a number of books, including *Judges* (1974) and *Gold Dust* (1980), as well as two books in the Time-Life *American Wilderness* series: *The Sierra Madre* (with Peter Wood) and *Sagebrush Country.* He has also written on a wide variety of subjects, including nature and the environment, for such magazines as *Audubon, Smithsonian, Sports Illustrated,* and *American Heritage.*

Arctic Walkabout

A journey from the mountains to the sea

BY SUSAN ALEXANDER



Bush plane over the North Slope, Franklin Mountains in the background. LARRY RICE

The arctic. To most people it conjures up images of a frozen, trackless wasteland—devoid of life. But for me it has always been a magical place that captured my imagination long before I had ever been there. So when I learned of increased pressure to develop the Arctic National Wildlife Refuge's coastal plain, I decided to see for myself just what was at stake. Along with two companions, I planned a trek across the plain, from the northern edge of Alaska's Brooks Range out to the Arctic Ocean. All three of us had flown over the area, but none of us had walked the plain.

Our journey began on August 12 in the village of Kaktovik on usually ice-locked Barter Island, which juts precariously into the Beaufort Sea, approximately 70 miles west of Canada's Northern Yukon National Park. As is often the case, Kaktovik was fogged in when we arrived. Ice was falling from the gray sky, and a north wind was blowing off the partly frozen ocean. The temperature was about 30°.

Day passed slowly into evening, as we waited for the clouds to lift. Finally they did, just enough for a bold pilot to fly us out to Peters Lake for the real start of our adventure.

Lakes Peters and Schrader, where the walkabout began. LARRY RICI

AUGUST 12 (Peters Lake).

Peters Lake lies near the northern edge of the Brooks Range, the world's northernmost mountain range, and is separated from Schrader Lake by a mile-long channel. The lakes were named after two geologists, but their Inupiat name, *Neruokpuk*, "big lakes," better describes these elongated azure patches of water nestled among the dark angular peaks of the range.

When we arrived, the sky began to change from a uniform gray to a dramatic array of deep pinks, oranges, and blues that shine from the layers upon layers of clouds enshrouding the surrounding peaks. The cover finally lifted enough to reveal a thin layer of new snow on the mountaintops. There can be no doubt about it, fall is well on its way to the arctic. And I am lucky enough to be here to experience it.

AUGUST 13 (between Peters Lake and Schrader Lake).

We began our journey by heading around the southern tip of Peters Lake across ominously named Carnivore Creek. The route required two river crossings. The first was merely brisk and refreshing, but during the second, the numbing water came almost up to our knees. Between braids of the stream, I stood on the gravel bars a moment to let

the blood run back to my feet. It felt great to put warm, dry socks and boots on again, but that feeling didn't last long. Soon, we were in classic wet tundra, defined not too alluringly as consisting of "black mucky soil with a permanently frozen subsoil overlain by a mat of vegetation." Before long, I heard that old familiar squish-squish as I felt the cool water work its way from the tundra to my toes. At this point, I said good-bye to dry feet for the remainder of the hike.

Already, we were discovering why a national wildlife refuge had been designated in the arctic. We saw Dall sheep high above us on the rocky slopes, a few caribou, lots of fat and happy parka (arctic ground) squirrels, and several willow ptarmigan—the Alaska state bird. The mottled reddish-brown feathers of the ptarmigan are rapidly giving way to white ones, reminding us of the approaching winter.

AUGUST 14 (past Spawning Creek).

It rained and howled all night long and the wind was still fierce in the morning. I didn't want to get out of my cozy sleeping bag until it calmed down. When we finally had to leave the tent, the rain had conveniently disappeared, and the sky showed signs of clearing. By the time we got on the trail, the clouds were gone and there was a mild breeze. Schrader Lake shines a brilliant turquoise against the golden tundra. It is a magnificent day.

Some might think that tramping along the seemingly uniform tundra carpet might get dull. But, with heads bowed, carefully watching our footing on the soft, bumpy terrain, we discovered a tiny ancient forest, full of different colors, shades, shapes, and textures. Though the harsh environment dwarfs the plant life in both size and variety, it nevertheless seems to be constantly changing and extremely diverse, with its lichens, mosses, herbs, and sedges.

With fall upon us, the tundra's apparent monochrome is splashed with brilliant scarlets, yellows, and oranges, as well as some green still left

A bench of blooming dryas near the Egaksrak River. DENNIS AND DEBBIE MILLER

from the summer. Every now and then, the mat of tundra offers up little surprises that invariably seem to appear just when my backpack feels less like a part of my body and more like an alien burden. Those spirit-lifting treats are flowers—usually just one or two, popping up out of nowhere: bright pink fireweed, tiny blue forget-me-nots, delicate buttercups, fluffy cotton grass, and the arctic poppy, standing delicately on its thin stalk. My sense of taste is also refreshed by the small ripe blueberries, cranberries, and very tart bearberries, lying among their fiery red leaves.

Arctic ground squirrel. GEORGE WUERTHNER

AUGUST 15 (near Okiotak Peak).

We awoke this morning to blue skies and hundreds and hundreds of caribou swarming over a nearby hillside. They just kept coming; it was like being in the eye of a hurricane of caribou. As we ate our usual breakfast—instant oatmeal fortified with a trail mix of nuts, seeds, and raisins—a few curious, mostly young, bulls drew close to check out the tent, and then moved on. Caribou make weird croaking noises. It seems almost undignified for such a majestic and elegant animal to sound like a bullfrog. They emit another strange sound—a clicking that sounds like hooves on rock. In fact, it is their ankle tendons cracking. Seeing just a few caribou scattered here and there had been exciting, but seeing them in such large numbers was overwhelming.

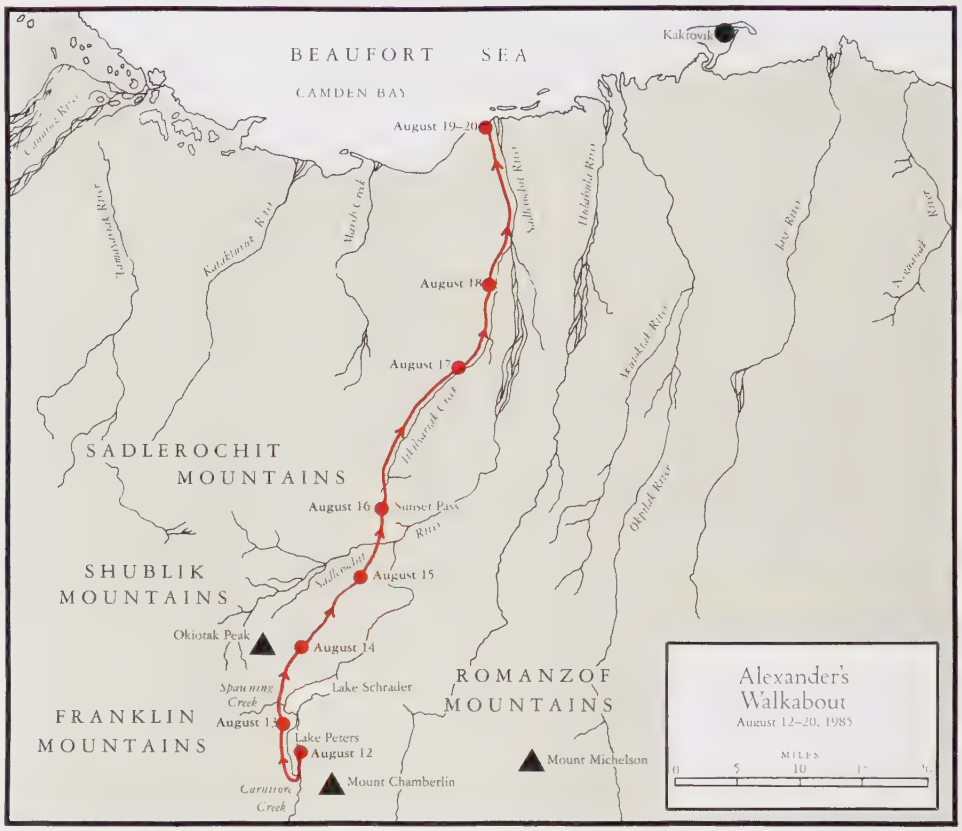
AUGUST 16 (Sunset Pass).

This morning we set out toward the Sadlerochit Mountains, a lovely, geometric, multicolored range of reds and grays, with shapes that vary from bears' teeth to tabletops to camels' humps.

On the way, we spotted three grizzly bears. They were about a mile away, and, to our relief, were heading away from us, up a tributary to the Sadlerochit Mountains. Nevertheless, we were wary as we walked through the little willow forests of

the river's gravel bars. Fortunately, our vigilance did not keep us from making another thrilling discovery: wolf tracks in the mud. Grizzlies and wolves—surely two of the wildest of creatures. Seeing them, even signs of them, intensified my sense of having ventured far into a wild land where I am just a visitor passing through.

After the icy, knee-deep Sadlerochit River crossing, I struck out ahead of my mates, hiking onto a ridge that provided a great view of the headwaters of the river. The Sadlerochit River Valley is strikingly beautiful, as it carves its way through the tundra, creating high dramatic bluffs that collapse periodically as they are undercut by the river. The meandering goes on and on, deeper and deeper into the glacial valley. And the vastness: to me, it defines Alaska—those endless distances, so impossible to gauge.



GRAPHICS BY WILMA FREY

A word about the terrain: At first glance, tundra appears to be the perfect hiking surface, akin to a well-manicured lawn. Nothing could be further from the truth, because tundra contains one thing no arctic traveler can avoid: the much-hated and oft-cursed tussock. The dictionary definition of tussock—a compact tuft of sedge grass—makes the stuff sound innocent enough, but, believe me, it is not. Tussocks are mushroom-shaped, up to a foot high, and surrounded by little pools of water. There is absolutely no graceful way to get through them. Try to step on them and they bend over, dumping the unsuspecting hiker into the water. Step in between, taking high steps over them, and their overhanging caps invariably grab your foot, sending you sprawling. Treading among them, alternating between these two ungainly techniques, is exhausting, painful, irritating, and just no fun. But by following streams, we were generally able to avoid the worst of the tussocks, walking instead on moist, spongy, but relatively even vegetation. However, we were not always able to avoid the fearsome clutches of the tussocks.

The Sadlerochit River, an icy, knee-deep crossing. Opposite page: Gravel bars and tundra, typical North Slope terrain. BOTH: LARRY RICE

Already wet from the deep Sadlerochit crossing, we got colder and colder as we trudged up toward Sunset Pass. It was so wet, we started to feel some concern about finding dry, flat ground to set up camp. Finally, we reached the pass and found a tiny, sort-of-flat spot for the tent. The experience pointed up one of the many ironies we found in the arctic. After wearing ourselves out from walking all day on the soft, springy ground, which would have made delightful beds, each evening we searched for rocky, hard, dry ground to set up camp. It just didn't seem fair.

It was blowing hard and cold in the pass and beginning to snow, so we hastily set up the tent, pulled off our wet clothes, and crawled into our sleeping bags to warm up. By the time our hunger forced us to emerge for dinner, all the clothes, which we had left outside, were coated with

The rolling beauty of the coastal plain, this view from the region of the Okpilak River. DENNIS AND DEBBIE MILLER

Arctic fox pups, Prudhoe Bay.
GEORGE HERBEN/ALASKAPHOTO

Arctic spring—sweet pea, milk vetch, lupines, louseworts, and avens.
STEVEN C. KAUFMAN/ALASKAPHOTO

frost. My socks and pants were so stiff, I thought they'd break in two. Having put on every stitch of dry clothing I had, I finally got warm, as we ate huddled around the stove in a little rock depression that provided some protection from the wind. I suppose this is one of those moments I'll enjoy talking about in years to come: a stereotypical arctic experience.

August 17
(just out on the coastal plain):
We awoke this morning to whiteness all around: snow covered the ground and a mist obscured our view of the valley. Fortunately, the wind had stopped, so it wasn't as cold. Without the breeze, it was still and quiet—you could hear the world sigh.

After breakfast, it was on with the still-wet, cold pants and drenched socks and boots. We couldn't stand around too long or our feet would begin to freeze, so off we marched. It took a while, quite a while, but finally my toes began to warm up, or at least the water squishing between them did. To escape the man-eating tussocks, we moved higher, and found the walking much better. The rocky ground felt very strange after all the sponge we had crossed.

Watching my footing as I trod through the rocks, a small geode embedded in a good-sized stone caught my eye. I have ogled these treasures in gem stores all my life, always hoping to find one myself someday. The arctic, offering up yet another surprise, was about the last place I thought I would have that dream fulfilled. Although tempted to carry it away, I stared at my find for a long time, then put it back where I found it—where it belongs.

Today, we moved quickly from one end of this picture-perfect, glacial, U-shaped valley to the other, and out onto the coastal plain. As we approached its edge, we could see all the way to the Arctic Ocean. We were walking in snow flurries, but could see patches of clear sky beyond. The sun was shining on the distant ocean, lighting up the pack ice. (Why is it that the sun is always somewhere else instead of warming us?)

Prehistoric survivor: a male musk ox. STEVEN C. KAUFMAN/ALASKAPHOTO

Our path brought us to an archaeological site of unknown antiquity. It consisted of a gathering of large rocks, a lot of broken wood, and several bones, including a couple of caribou jawbones. It was probably a hunting camp, and the rocks had been used to hold down the Eskimos' hide tents. The remains emphasized how slowly things decay in this sparse environment.

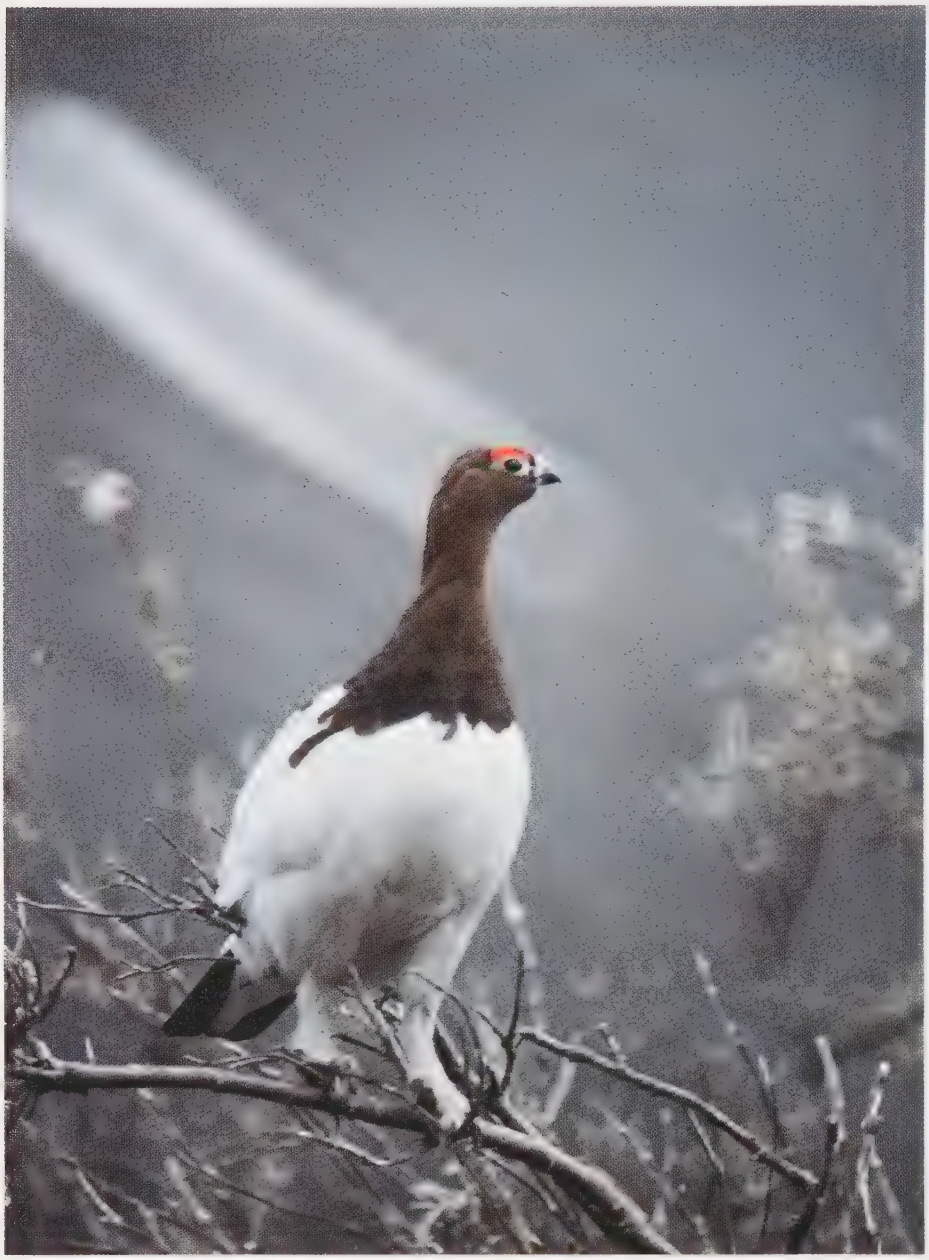
The arctic continues to amaze me. Everything is here: lakes, streams, mountains, glaciers, plains, wildlife, gems, flowers, endless vistas, and even signs of ages long gone.

August 18
(along the Itkilyariak River).
The weather today has been perfect, with the sun almost constantly breaking through the puffy clouds. I'm sitting huddled in the tundra, watching the slowly sinking sun light up the new snow atop the Sadlerochits. The only sound is the rushing water of a nearby stream.

I really like the coastal plain. I thought I might find its flatness monotonous, but it has much more contour than I had imagined, making for endlessly changing shapes, shadows, and colors. I am moved by its vast expansiveness, even though the openness is brought to an abrupt halt by the Brooks Range to the south. Looking north, we can see the ice pack and its reflection mirrored in a mirage. Heat shimmers rise off the plain, reminding us that we are, despite all the apparent moisture, in a desert. The arctic receives no more precipitation than the Mojave. The moisture that allows the plants and hordes of mosquitoes to grow collects on the surface, unable to penetrate the permanently frozen ground called permafrost.

August 19
(along the Sadlerochit River).
We emerged from the tent this morning to find a herd of muskoxen hanging around our backyard. We moved as close as seemed comfortable for them, backing off when a couple stood up to stare nervously at the intruders. They are certainly strange creatures, with their long, ankle-length, human hair-like coats, and curled, pig-tail horns. As we have crossed the plain, we have been seeing tufts of sun-bleached qiviut—that softer-than-cashmere muskoxen "down"—shed and left hanging on the willows like Spanish moss.

The noise of our preparations to leave (one of us was wearing bells to ward off bears) frightened the animals, causing them to form their



Arctic color: ptarmigan on willow branch. GEORGE WUERTHNER

time-tested defensive circle. Much like the wagon trains of yesteryear, the weak and the young find protection in the middle.

Over the last couple of days, we have seen lots of birds: long-tailed jaegers, golden plovers, sandpipers, hawks, and a few we didn't recognize. A pair of jaegers were relentlessly swooping and diving after a smaller bird. Four great gray owls, apparently young, hooted as they flew away from us, and our presence scared flocks of ptarmigan out of the tundra.

The tundra continues to change. As we get closer to the ocean, there are fewer flowers—some dryas, heliotrope, and paintbrush. We have been traversing large angular blocks of earth covered with red vegetation, each one set apart from its neighbor by a deep gully of willows. We could jump over most of these polygons, but others, closer to the edge of the river bluff, are separated by gaping crevasses that are a chore to cross. Eons of cold and frost certainly give the land some very strange shapes, bumps, and bruises.

Our peaceful journey through this pristine landscape has been disrupted only by the signs of the seismic exploration that took place during the last two winters. Some of the scars appear to be healing. But it is obvious that others—those made by the teeth of bulldozer tracks, clearly visible among the moss—will never disappear. The grid of seismic lines is so conspicuous that the Fish and Wildlife Service field researchers often use it to navigate on the coastal plain. We were most disturbed, however, when we came upon a large pile of rusting drill bits, carelessly discarded by a seismic crew.

AUGUST 20 (back in Kaktovik).

This morning we arose slowly to meet a breezy, cold, and overcast last day of hiking. As we walked north along the bluffs overlooking the Sadlerochit River, I seemed to catch an occasional whiff of sea air. After a while, the clouds over the mountains lifted. On the southern horizon, the silvery peaks stood out in sharp contrast with the dark valleys. The landscape looked like a nineteenth century transcendalist oil painting.

We could see the Sadlerochit Mountains, and, far away, the very pass from which we had emerged just a few days before. The scene gave me a dramatic sense of the great distance we had covered.

It was late afternoon when we reached our pick-up point, about a mile from the coast. A dense fog was rolling in. Feeling the nip of the wind—chilled from blowing over the ice of the Beaufort Sea—I thought about what I had just experienced. I had walked more than 60 miles, endured rain, snow, ice, and sun, trudged through nasty tussocks, slid and skidded on river-rounded cobbles, felt hot, cold, achey, good, hungry, and full, saw bears, birds, lemmings, voles, caribou herds, prehistoric beasts, and beautiful flowers and plants.

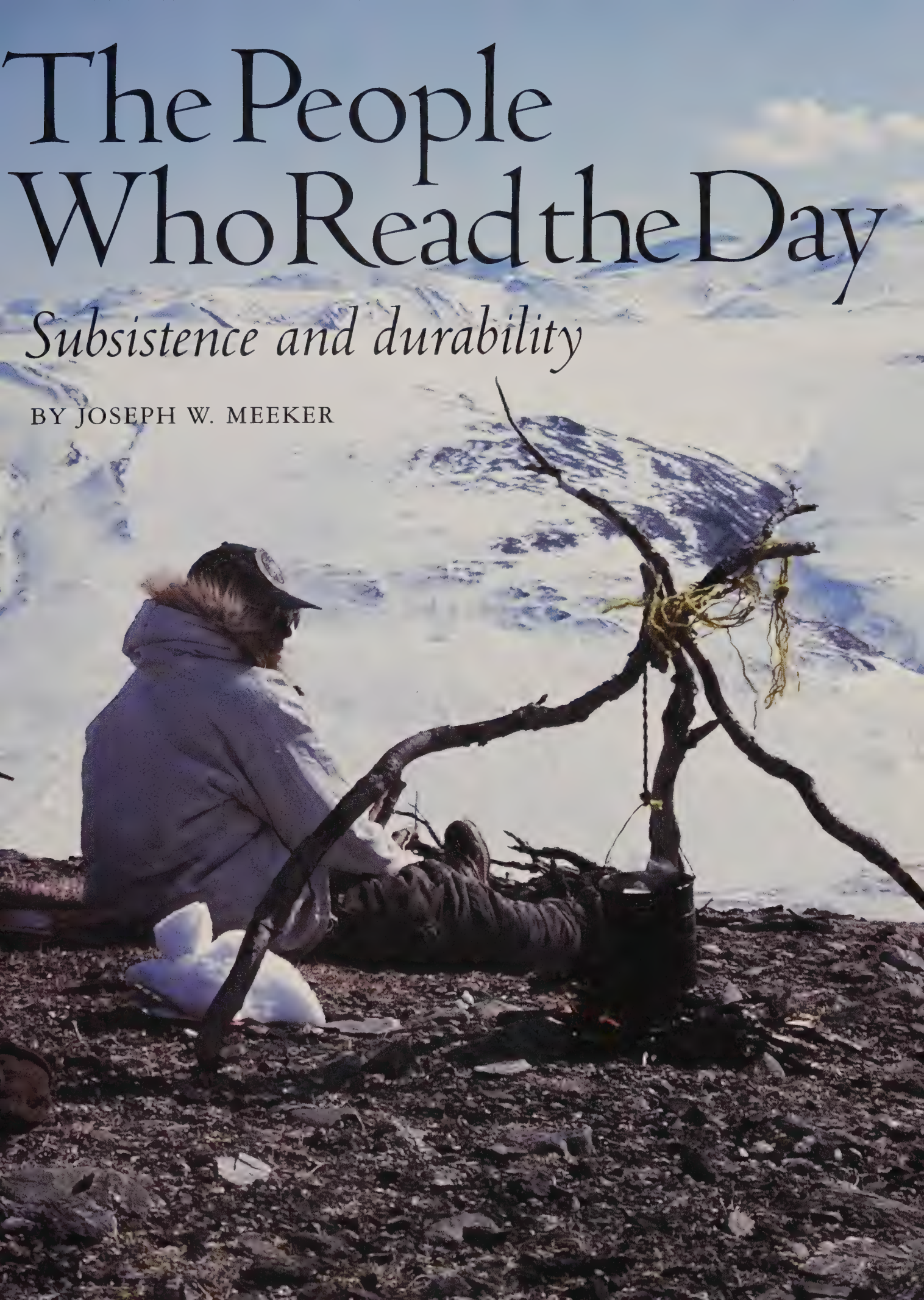
This journey has filled me with awe, and I already look forward to returning. But most of all, it has left me with the overwhelming conviction that I must do all I can to preserve this extraordinary and magical land.

SUSAN ALEXANDER is The Wilderness Society's Alaska regional director, based in Anchorage.

The People Who Read the Day

Subsistence and durability

BY JOSEPH W. MEEKER



Time was when all people awoke to wilderness with every rising. For millions of years, hunters and gatherers scanned the land, sky, waters, plants, and animals of each day to learn how to live it appropriately. The signs might say that this day is for hunting, or perhaps the message would say that today is a good day for visiting relatives to plan a ritual of transition. Humanity's ancient, necessary, daily dialogue with wild lands was the origin of the wide-ranging consciousness that distinguishes the human species from other creatures.

Where this way of life still exists, we call it by the somewhat patronizing name, subsistence. One who subsists sounds vaguely like someone a notch below genuine existence. The word connotes persistence in a state of privation, but that is not the way it seems to most subsistence peoples. Subsistence life is a complex web of cultural and social practices, with its many strands anchored in wild lands. It is also a practical cooperative method for fulfilling economic needs. It might be defined as the art of integrating human life with living wilderness.

Subsistence endures as a way of life in many parts of the world, but almost nowhere more broadly or persistently than in Alaska. The wild lands of the 49th state are among the earth's prime settings for the subsistence life of Native peoples and for those relatively few non-Natives who hold similar values. But in Alaska, subsistence, like the wilderness it requires, is at risk. It is threatened by economic development, meddled with by federal and state regulations, impaired by sport hunting and tourism, and weakened by the competing white culture. Yet subsistence persists, and its fate over the coming decades will influence American ideas of conservation, development, and land use in profound ways. Subsistence is not only a big piece of the Alaskan past, it also is a potent part of the future.

For Alaska Natives, understanding the meaning of subsistence is the whole curriculum of life. It begins when children first accompany their parents in search of wild foods, and learn that there is always a practical way to do things and an elder's story to provide meaning. Myths and tales tell of the origins of land, plants, animals, and people, and of the necessary relationships among them that must be honored and observed. Subsistence living is maintained by an oral literature that explains and dramatizes the natural ecology of the earth, passing on the knowledge of the whole system to each new generation. Subsistence culture offers a rare example of the integration of economic and cultural life with environmental ethics.

Previous page: A Native Alaskan keeping watch at the overlook called "Kattak," above the Hulahula River. Below: Generations—a young man watches his father setting a ground squirrel trap. BOTH, SVERRE PEDERSEN

Eskimo hunters, for instance, normally do not speak of "killing" animals—they "take" them, or "catch" them. A caught animal is one whose temporary appearance in a body has been captured, while its spirit remains permanently intact. A young traditional Native hunter catching his first animal, usually a ptarmigan or ground squirrel, learns not only the skills of stalking and shooting, but also how to show respect for the creature and its context. Among almost all Native peoples, the animal's body traditionally is used as completely as possible with no waste, and among the Kutchin Natives, the site of death itself must be cleansed of all evidence of the hunt; bloodstains may not be left upon the earth. It is this degree of respect for nature (including humanity) that is the cornerstone of Native subsistence. Learning how to live the ways of subsistence culture can be a totally consuming lifetime activity that unites physical skills, accurate scientific knowledge, practical economics, and continuous spiritual growth as aspects of a seamless world view.

One place where the culture of subsistence is at home is in the Arctic National Wildlife Refuge. I first learned of this region—then entirely unprotected—in 1957 when I was a ranger at Denali (then Mt. McKinley) National Park, and met there Olaus and Margaret Murie. As Donald Dale Jackson relates in his own contribution to this issue of *Wilderness*, the Muries, with The Wilderness Society, were even then mounting a vigorous series of wildlife studies and a public information campaign that would lead to the establishment of the Arctic Wildlife Range by President Eisenhower in 1960. Later in the 1960s, Canadians began to push for an adjacent refuge in Yukon Territory with the hope of creating an international wildlife preserve. Native subsistence peoples of both Alaska and Canada contributed significantly to these efforts, for they were the best sources of information about wildlife populations and the necessary strategies for protection of their habitats.

From as far west as the Sagavanirktok River in Alaska to as far east as the Peel River in Canada's Northwest Territories, and as far south as the Brooks Range of Alaska and the Ogilvie Mountains of Canada, is the enormous territory required by some 165,000 animals known as the Porcupine Caribou Herd (named for the Porcupine River drainage, a vital portion of the habitat). Much of the area used by this herd is within the Arctic Refuge and Canada's Northern Yukon National Park. The migratory territory of the Porcupine caribou is also the home of several

With the patience of glaciers, two Natives fish through holes in the ice on the Hulahula River. SVERRE PEDERSEN

Kutchin Athabascan Native peoples, and for Inuit and Inupiat Eskimos in Canada and Alaska. Altogether, eight Native communities rely heavily on this herd—Kaktovik, Arctic Village, Chalkyitsik, Fort Yukon, and Venetie in Alaska, and Aklavik, Old Crow, and Fort McPherson in Canada. The lives of caribou and Native peoples are bound together by the webs of subsistence. As one Inupiat put it, "We live like a wolf . . . follow the caribou."

Following the caribou calls for complete commitment to the caribou context. It is a journey in time and space that may cover thousands of square miles and many cycles of the seasons. Today it is often a mechanized journey by snowmobile or outboard engine. Modern technologies are used to enhance the hunter's options and mobility, but they have not become ends in themselves. The hunt is a value-laden part of Native culture as well as an economic necessity for people who have no supermarkets and no wish for them. The caribou remain the leading actors on a moving stage, and with each change of settings new supporting roles emerge for people and for other animals.

The people depend upon more than caribou, of course. More than fifty other animal species are used, either for food, clothing, or exportable pelts, each in its own place and at the proper time. From October to December is the time to watch the hills for Dall sheep, and arctic foxes and wolverines are best trapped on the coastal plain during the darkest winter months. Ground squirrels emerge from hibernation in April and May, along with the brown bears. Whaling is best from late August until early October, when coastal fishing for arctic char and other species is also at its peak. Pintail ducks, oldsquaw ducks, and snow geese (and their eggs) occupy springtime attention, and freshwater fishing is for spring and late fall. Ripe cranberries signal

The village of Kaktovik, Barter Island, Arctic National Wildlife Refuge—subsistence is not just a word in a dictionary here; it is life. GALEN ROWELL/MOUNTAIN LIGHT

the end of summer. Attentiveness to daily change with each new day is both necessary and satisfying for subsistence people, another act in the seasonal drama.

The word subsistence took on a powerful resonance in 1971, when the Alaska Native Claims Settlement Act (ANCSA) was passed. Congress established what was considered a generous settlement with Alaska Natives to make it possible to get on with the business of extracting Alaskan oil. ANCSA provided $962.5 million to Alaska Natives, and gave them title to forty-four million acres of land, about one-tenth of Alaska. The lawmakers chose not to deal with tribal governments, but instead required that corporations be established to administer and hold title to the land. Native corporations, not tribes or people, own Alaska Native lands, and the corporations need to make profits to survive.

By this single act, Congress attempted a piece of social engineering designed to transform an ancient subsistence culture into a model of mainstream American corporate life. Twenty years would be enough to accomplish that, Congress thought, so an expiration date of 1991 was set for exclusive Native ownership of corporate shares—although legislation now in Congress would eliminate that deadline altogether. After 1991, the law stipulated, these shares could be bought, traded, and taxed like those of any other corporation. Native children born after December 18, 1971, are not shareholders and can only become such by inheritance.

Since their arrival in Alaska via the Bering Strait land bridge some 10,000 years ago, Alaska Natives had possessed the land, and had been possessed by it—although, as with most aboriginal peoples, the concept of "ownership" as European culture understood it, was alien to them. Evidence of Native "title" was in the stories and myths linking cultures to particular places and teaching the subsistence arts and strategies essential to maintaining the integrity of wilderness in perpetuity. But ANCSA extinguished all Native claims to Alaskan lands based on use and occupancy, save for those it placed in the ownership of Native corporations, and it extinguished all similarly based claims to hunting and fishing rights on all non-Native land. It was assumed that lands owned by Native corporations, in combination with directly adjacent state and federal lands, would suffice for subsistence needs. Fifteen years later, only two of Alaska's thirteen Native corporations are in sound financial shape, and Alaska Natives are struggling to preserve the wild basis for their subsistence culture.

ANCSA was not the last instance of legislative tinkering with subsistence life. Nine years later, the Alaska National Interest Lands Conservation Act (ANILCA) was passed. Among its other provisions—including that which created Arctic National Wildlife Refuge—was one in which Congress invoked its constitutional authority "to protect and provide the opportunity for continued subsistence uses on the public lands by Native and non-Native rural residents" of Alaska. ANILCA clarified hunting and fishing rights and gave priority to subsistence users, including non-Natives, over all other users. Significantly, the act recognized that subsistence uses are essential to Native cultural existence.

ANCSA and ANILCA were manufactured in Washington by lawmakers whose knowledge of subsistence comes from the reports of federal agencies and the pressure of lobbyists, both of which are characteristically ignorant of the etiquette of wilderness; ANCSA speaks in corporate jargon, and ANILCA struggles to communicate through the flat language of bureaucracy. Neither speaks nor hears Native intonations, although both laws were created ostensibly to serve Native needs. Their commands are absolute and authoritative, but sometimes contradictory. Still, they provide the legal basis for hope that subsistence will endure.

ANCSA and ANILCA proclaimed the new commandments, but left it to federal and state agencies to work out the rules and regulations. Subsistence uses of wildlife in Alaska are governed by a state subsistence law enforced by the Division of Wildlife Protection, a part of the Alaska Department of Public Safety, and by the Department of Fish and Game; by federal fish and wildlife regulations; by the National Park Service, the U.S. Fish and Wildlife Service, the Marine Mammal Protection Act, the Endangered Species Act, international conventions protecting migratory birds, whales, fur seals, and polar bears; and by international treaties with other countries. And in recent years, subsistence has also begun to be self-regulating through organizations founded by Alaska Natives.

Hunting skills, ecological knowledge, conservation practices, and spiritual understanding of wilderness are no longer enough to assure the survival of subsistence living. New needs have arisen for political savvy, legal knowledge, skills for organizational development, and the ability to negotiate international treaties. These talents have grown among Alaska Natives since the late 1970s, when proposals were made in the U.S. House of Representatives to open parts of the Arctic National Wildlife Range near the Inupiat village of Kaktovik to oil and gas leasing. The area being threatened is the major calving ground for the Porcupine Caribou Herd. As they had done before in times of need, Alaska Natives reached across the border to cooperate with Canadian Natives in defense of caribou habitat. For the moment, they won their case against oil leasing.

The International Porcupine Caribou Commission (IPCC) grew in 1982 from this coalition of Alaskan and Canadian Natives. The Commission is registered with the United Nations as an indigenous peoples' organization, and its purpose is to protect the habitat of the wide-ranging Porcupine Caribou Herd. Government agencies on both sides of the border had snarled themselves into inactivity, but the Native coalition of the IPCC worked out terms for an international agreement, currently being negotiated. The draft treaty calls for protection of the entire range of the Porcupine herd, whatever governmental or management regime may affect smaller portions of that range. Two

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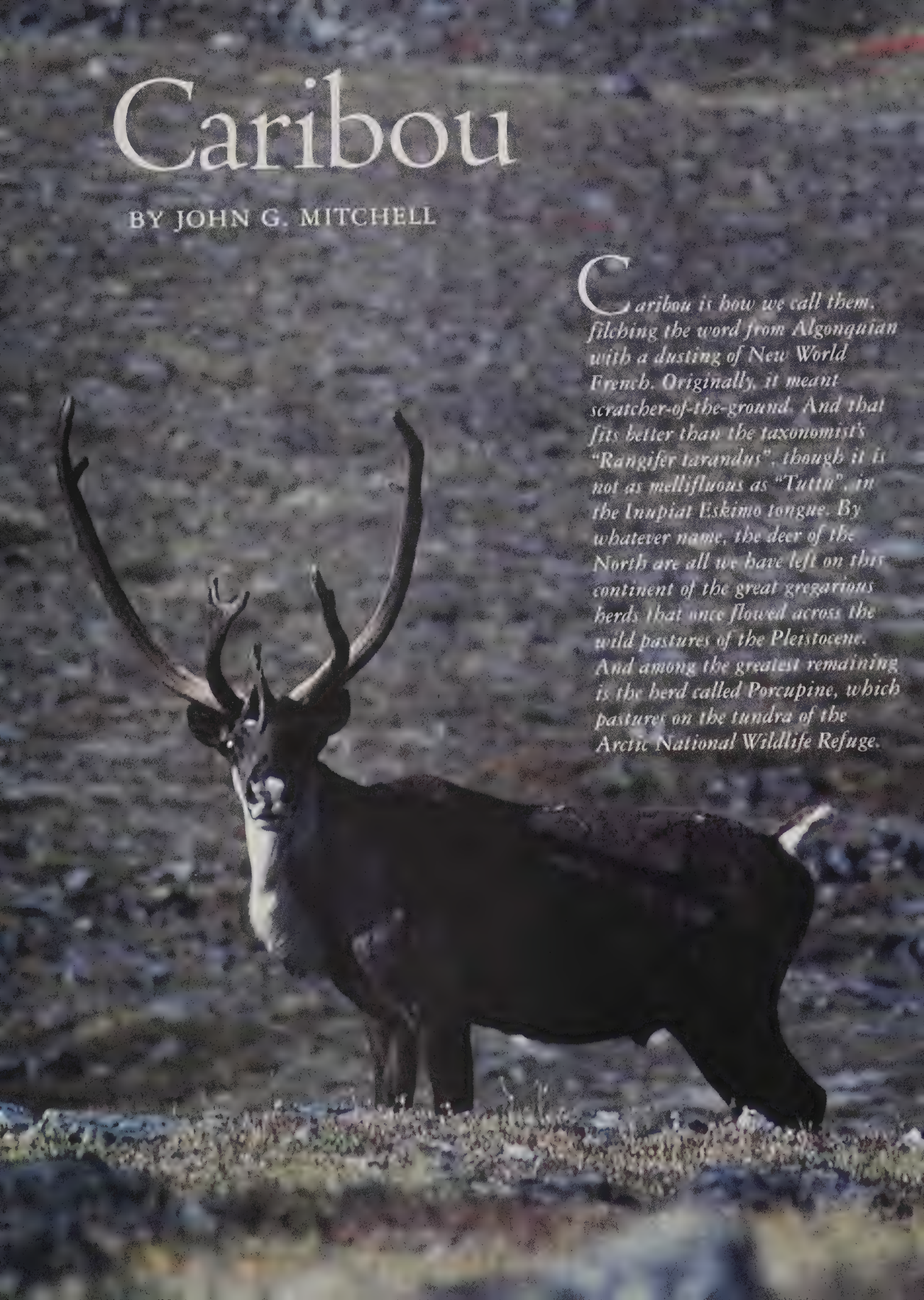
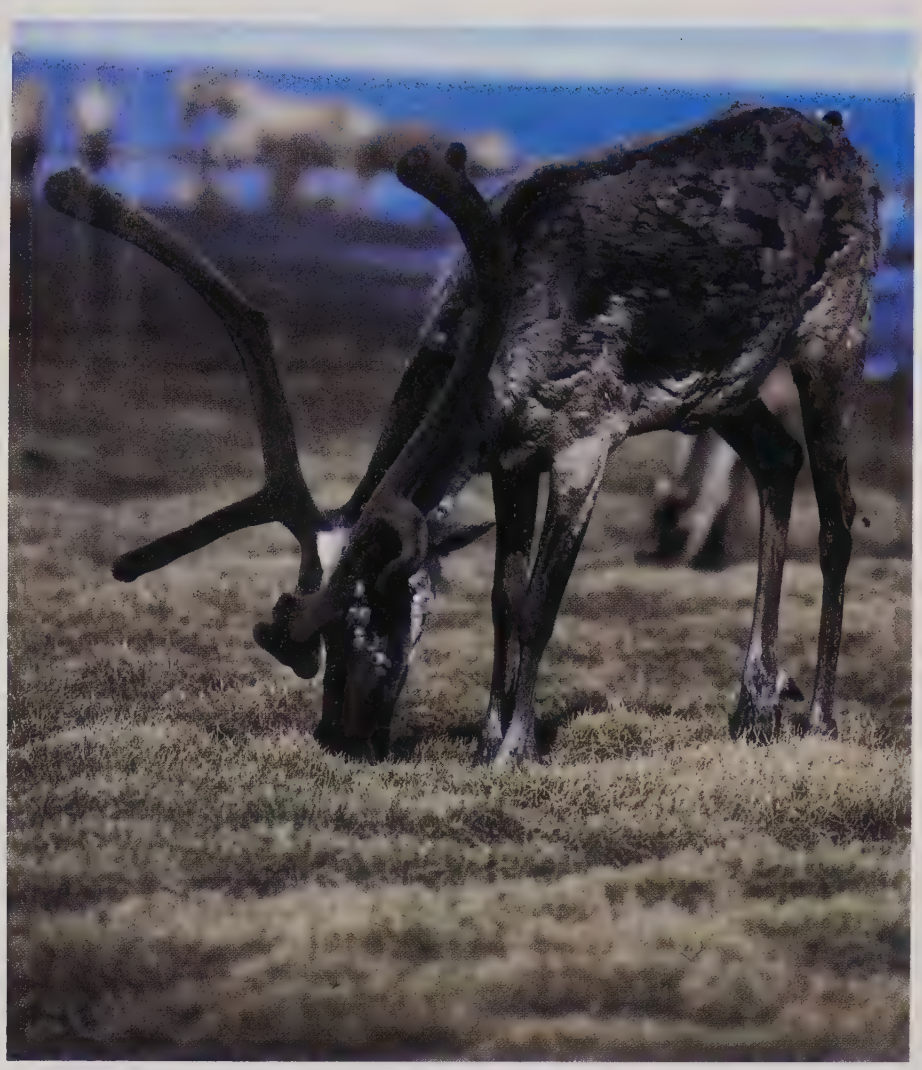
Caribou

BY JOHN G. MITCHELL



Caribou is how we call them, filching the word from Algonquian with a dusting of New World French. Originally, it meant scratcher-of-the-ground. And that fits better than the taxonomist's "Rangifer tarandus", though it is not as mellifluous as "Tuttu", in the Inupiat Eskimo tongue. By whatever name, the deer of the North are all we have left on this continent of the great gregarious herds that once flowed across the wild pastures of the Pleistocene. And among the greatest remaining is the herd called Porcupine, which pastures on the tundra of the Arctic National Wildlife Refuge.



GARY BRAASCH

Once it was said that this herd contained numbers beyond counting. On hearing that, someone recalled that the buffalo of The West once were held beyond counting, too. Nowadays, biologists peg the Porcupine herd census between 100,000 and 170,000, with sizable fluctuations year to year. Adversity is merciless in the Arctic. Where wolves and grizzlies roam, predation can take half the annual calf crop. Starvation and wind chill are big killers. And, if separated from its mother, a weakened calf can be destroyed by mosquitoes. In July, with thirsty insects gathered by the millions, the herd masses on the coastal plain of the Refuge, then heads for points south. Along the way, caribou seek out lingering patches of snow to escape their insect tormentors. And always, too, where routes of migration intersect lines of human subsistence, there is Man, the hunter. Life already is hard for Tuttu. It needs an oilfield about as much as it needs a bullet hole through the back of its neck.

LEFT: GEORGE HERBEN/ALASKAPHOTO; PREVIOUS PAGE: GEORGE WUERTHNER

JOEL BENNETT ALASKAPHOTO

Like most caribou, the Tuttu of the Porcupine herd migrate great distances from summer calving grounds to winter range. But in the river-laced, lake-sprinkled barren ground country, the animals cannot go very far in any direction without getting wet. Thus has much practice made Tuttu the strongest swimmer of all the Earth's deer. Its long, hollow guard hairs—regarded as nature's best insulators—also turn out to be nature's most buoyant flotation device. And the creature's wide hooves make splendid paddles. Still, for all their mastery of the water, caribou approach crossings with hesitation. The genetic memory tells them that this is where the two- and four-legged predators most often lurk, waiting to strike as the herd piles up at the river's edge. Then, once in the water, it's damn the memories and full speed ahead.

JOEL BENNETT/ALASKAPHOTO

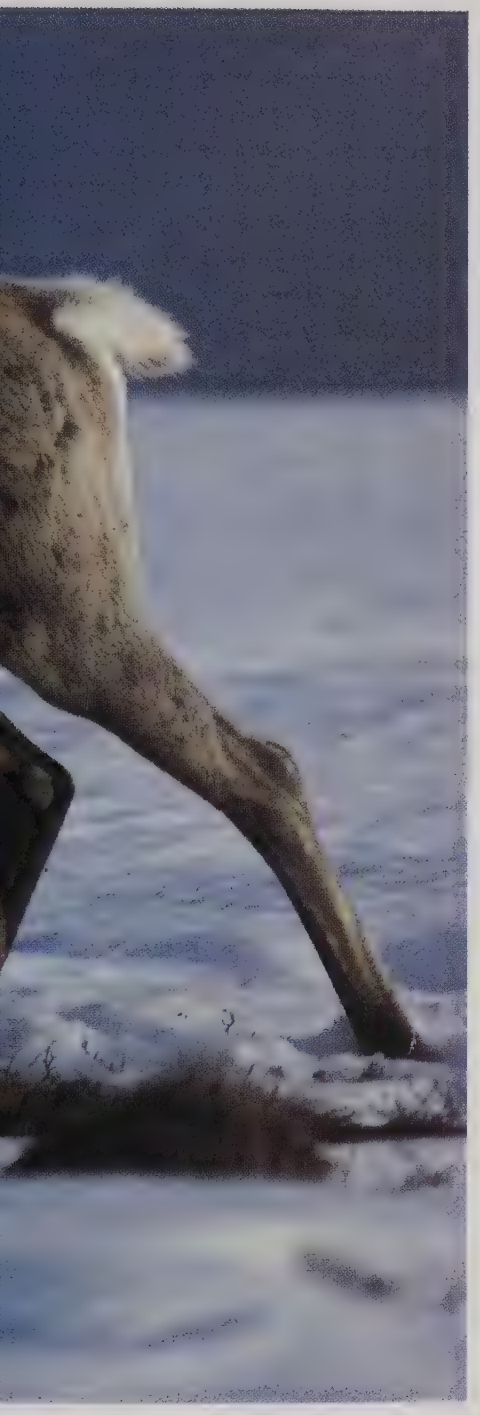
Migration—cyclical, like a clock. There is a vernal restlessness upon the winter range. From the south-facing slopes of Alaska's Brooks Range and the Yukon's Ogilvie Mountains, from the headwater valleys of the Chandalar and the Sheenjek, the Blackstone and the Bonnet Plume, dispersed bands of caribou begin their long trek north to the calving grounds on the Artic coast. In May, scattered across the tundra from near Prudhoe Bay to Beaufort Lagoon, the pregnant cows pause to give birth. Bulls and yearlings join the throng, the calves gain their footing, and at last—in the golden light of summer's midnight sun—the Porcupine herd is on the move again, browsing willow flats and lichen fields and laying on fat for the lean months ahead. Then comes the fall shuttle, the rut, the first snow, and the long columns winding south to the sheltering taiga and the long blue shadows of the winter pause.

GEORGE CALEF/MASTERFILE (FROM *CARIBOU AND THE BARREN-LANDS* BY GEORGE CALEF, 1981).
RIGHT: STEPHEN J. KRASEMANN/ALASKAPHOTO

For an animal destined to spend its whole life trekking and swimming the migratory circuit, the Tuttu calf deserves a head start. And it takes one, here on the Jago River plains of the Arctic Refuge. Within hours of its birth, a calf can tumble along in the tracks of its mother. (Incidentally, this is in fact the mother: unlike other female members of the deer family, caribou cows grow antlers.)

The Porcupine herd deserves a head start, too. And it has been given one of a sort—sanctuary in this Arctic Refuge and in Canada's adjacent North Yukon National Park. But there are tipping points. Bring in enough helicopters, drill enough holes in the tundra, provide enough access and you no longer have a Refuge. No Refuge, no sanctuary. No sanctuary, no habitat. No habitat, no caribou. No caribou, no wilderness.

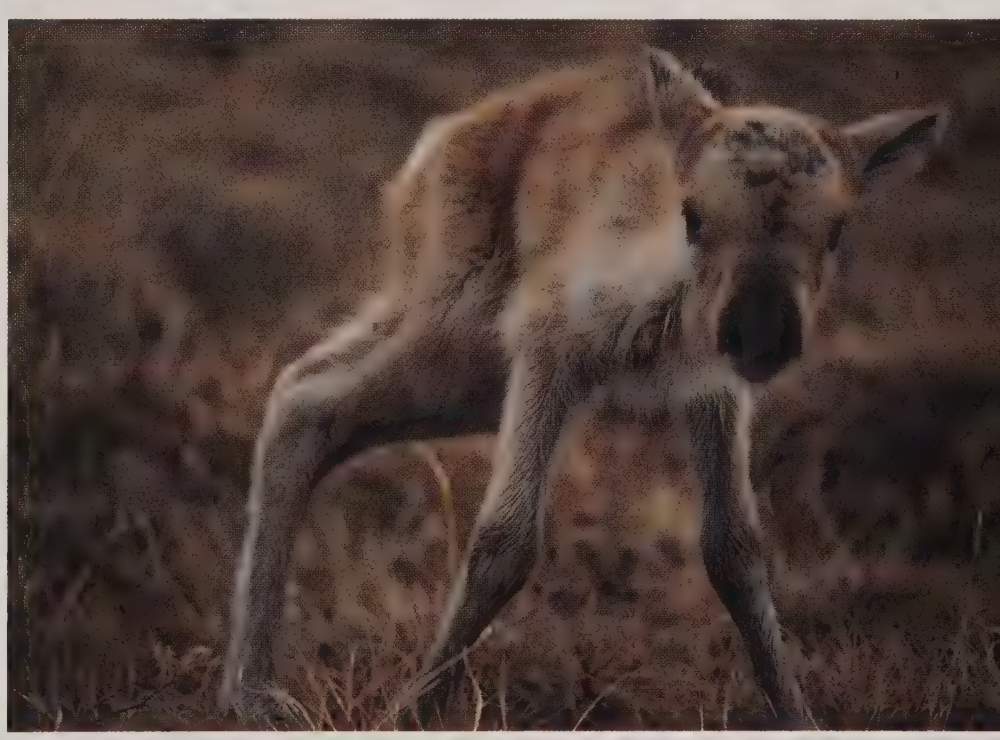
JOHN G. MITCHELL, a frequent contributor, is a Field Editor for *Audubon* magazine and author of *The Hunt: A Personal Exploration of Hunting in America Today.*



"The ultimate question for caribou is the same as that once posed for bison—can the land be theirs to wander?"

—A.T. BERGERUD in *Big Game of North America*

ALL PHOTOS THESE PAGES: GEORGE CALEF/MASTERFILE (FROM *CARIBOU AND THE BARREN-LANDS* BY GEORGE CALEF, 1981)



Culture, Tradition, and Necessity

Editor's Note: Among the many other things that distinguish the Great Land of Alaska is the fact that it is the only state in the nation with a Division of Subsistence in its Department of Fish and Game. The Division's research director is Robert Wolfe, based in Juneau, and some of his own thoughts on the question of subsistence might shed further light on a complex and sometimes confusing subject. The following interview was conducted in July by Jim Magdanz, a resource specialist with the Division of Subsistence.

The mix of technology: snowmachines and "dogsleds" on the Hulahula River, Arctic National Wildlife Refuge. SVERRE PEDERSEN

MAGDANZ: The word "subsistence" was rarely heard twenty-five years ago and is still unfamiliar to most people outside Alaska. Today it seems every Alaskan can define it, but every definition is different. What is your definition of "subsistence" in Alaska?

WOLFE: In Alaska, there is a technical and legal definition of subsistence: the customary and traditional use of fish and wildlife for a family's own uses. Those uses can be for food, shelter, and clothing, also for sharing between families, and for customary trade between families. Subsistence occurs in rural communities, but not in urban areas of the state.

More than that, subsistence is a way of life. Fish and wildlife play a major economic role in communities. The processing and harvesting activities are the "social glue" that ties families and communities together. The values and beliefs attached to these customs and traditions are the basis for a person's self-identity.

MAGDANZ: Can you give me some examples?

WOLFE: If you were to go to the upper Yukon and Porcupine river area in late summer, you would see families fishing with nets to take large quantities of salmon and whitefish. The men would be catching the fish. The wives and daughters and sisters would be working together to cut, dry, smoke, and store the fish. The older people would be giving advice, an important support role, and would receive shares of the fish from their active sons and daughters and other relatives.

MAGDANZ: Why is subsistence important in Alaska?

WOLFE: The diets of Alaskans are quite different from diets of Americans in the Lower 48. Let me give you a couple of specific figures in terms of fish consumption. Whereas the average American consumes only thirteen pounds of fish per year, in places like the upper Porcupine individuals may consume between 200 and 500 pounds of fish per year. This fish substitutes for other kinds of food which are unavailable in rural Alaska, especially for dairy products like milk and cheese. Fresh fruits and vegetables are also unavailable in many rural villages.

MAGDANZ: We see pictures of Eskimos on snowmobiles, and Indians using outboard motors on fishing boats. Many live in frame houses with some modern conveniences. Is this subsistence?

WOLFE: Yes. Technology is only a very thin veneer overlying the heart of the subsistence way of life. Technology often changes over time—for example, from dogs as pack animals, to dogs linked in teams pulling sleds, to snowmachines. These things change. But the underlying core is subsistence as a way of life. The nutritional dependencies, the social dependencies of family networks, and the values and personal identities remain very traditional.

MAGDANZ: In other words, you're saying the tools change but the functions don't.

WOLFE: That's right—and at the same time that modern hunter-gatherers find themselves linked to world markets, oftentimes quite large and surprising in their complexity. For instance, there are the fur markets in Europe, or fish markets in Japan, or ivory carving markets in New York. The money from these small-scale enterprises in the villages is used to purchase the equipment now used to support the traditional way of life.

MAGDANZ: So the carver sells his seal figurines, and uses the money to buy gasoline for his snowmobile.

WOLFE: Right. But these ways of earning income are usually very unstable. Villages must remain flexible as world markets change due to factors outside their control. The Eskimo villages and the Indian villages of today no longer exist in isolation from the world economy.

MAGDANZ: Can't the same world economy provide for their sustenance?

WOLFE: No. Many communities in Alaska are almost self-sufficient in food, and certainly self-sufficient in terms of their social needs. There are few alternatives to subsistence. They are not satisfying alternatives. Welfare support would be one alternative, and that would be a tremendous social and cultural loss. For many communities, there are no ways of making a living on their own. No industries. No jobs. Nothing to replace subsistence.

MAGDANZ: Can't people buy them?

WOLFE: They can't buy them in the villages. Village stores generally stock grains (e.g., flour, rice and macaroni), sugars (refined sugar, soda pop, candy bars, cookies), and some fats (lard, margarine).

MAGDANZ: In other words, non-perishables?

WOLFE: That's right. Hunting and fishing are the major sources of fresh food in most villages.

MAGDANZ: How is subsistence hunting and fishing different from sport hunting and fishing?

WOLFE: Sport hunters tend to fly in, hunt, and fly out with small quantities of meat. People in subsistence communities hunt in traditional areas. Generally, people hunt to the edge of their traditional territory and go no farther. This is especially true in the Brooks Range, because it is the traditional dividing line between Eskimos and Indians.

Sport hunters often travel long distances from urban areas. The sport hunter generally sees all public land as being a potential hunting area. Sport regulations are written to allow wide-ranging hunting. But a subsistence hunter would feel uncomfortable hunting outside the area where he grew up. Plus, it would be too expensive. A sport hunter is often willing to spend more money.

Continued from page 32

principles are the cornerstones of the proposed agreement: maintenance of a healthy population in the caribou herd, and protection of the vast ecosystem that is its habitat. Jonathan Solomon, a Native chief living in Ft. Yukon and the principal architect of the IPCC, explained the basis for Native authority: "We are in the same ecosystem with the Porcupine Caribou Herd . . . we are the experts on these issues, so use us."

Subsistence expertise has emerged as an important factor in wilderness Alaska through a variety of indigenous organizations. The Alaska Eskimo Whaling Commission has become a significant influence upon national and international whaling laws. The Eskimo Walrus Commission was created to develop comprehensive plans for protection of walrus habitat along western Alaskan shores. When migratory bird populations began to suffer because of conflicting purposes among state and federal agencies and sport hunting groups in Alaska and California, Alaska Natives organized to negotiate the Hooper Bay Waterfowl Agreement, and applied their knowledge of migratory patterns to the development of new management plans. Many such organizations are growing among Native subsistence peoples of Alaska, demonstrating that their traditional knowledge of wildlife is soundly based, that it can be integrated with non-Native scientific studies, and that subsistence people have the political and organizational skills to make their voices heard.

One person who has helped Native voices be raised is the Honorable Thomas Berger, a former Chief Justice of British Columbia (and a new member of The Wilderness Society's Governing Council). Berger had built his judicial reputation in Canada upon his efforts to secure legal rights for Native peoples. In 1974, when Alaskan oil and gas discoveries led the Canadian government to plan a gas pipeline linking the Prudhoe Bay fields to North American markets through the Mackenzie Valley of northwestern Canada, Berger was named Commissioner of the Mackenzie Valley Pipeline Inquiry. Thomas Berger brought a new meaning to the idea of impact studies when he took his inquiry directly to the people and the land to be affected by the project. In hundreds of hearings held in villages along the proposed pipeline route, Berger listened to the experts whose knowledge of the land was rooted in untold generations of experience. Based upon that testimony, Berger recommended delay and rerouting of the pipeline and settlement of Native land claims and subsistence rights. The Mackenzie pipeline project died as a result.

Justice Berger was a natural choice to lead a review of the Alaska Native Claims Settlement Act. The Inuit Circumpolar Conference, an international organization of Eskimo peoples, appointed Berger in 1983 as Commissioner of the Alaska Native Review Commission, and charged him to conduct studies to make recommendations concerning the implications of ANCSA for Alaska Natives and for indigenous peoples around the world. Properly considered and applied, Justice Berger's studies could help not only to make Alaskan subsistence life a significant influence upon wilderness planning everywhere, but establish subsistence as a link connecting wilderness preservation with the worldwide movement for human rights.

I was present to testify when Justice Berger held hearings in Anchorage during October 1984. Like the other non-Native scholars, scientists, and bureaucrats at the meeting, I soon became aware that I was not much of an authority on the meaning of subsistence. Non-Natives have generally studied the arctic at a distance or for short periods. Graduate students and scientists armed with research grants fly in to remote study areas to gather data, preferably during the summer when the weather is good, then dash back to their labs to crunch numbers in their computers. Their objective methods provide useful information for land use planning, but they often lack the comprehensiveness and sensitivity to nuance that Native observers collect as a matter of course during their daily affairs.

Eskimo women, preparing meat for their families, watch for placental scars that give evidence of last year's births and for signs of disease. Examining many caribou livers attentively can reveal which parasite populations are blooming. The hunter knows where his animal was caught and where his father and grandfather hunted for their food. Stomach contents can be compared with current patterns of vegetation growth to learn about dietary needs and distribution of food sources. Such information, plus hundreds of other variables, is now being documented by Alaska Natives to provide more detailed and complete data than spot studies by scientific teams can possibly gather. Native people have always measured the environment that envelops them daily, but now they are doing it in ways that can be applied cooperatively with non-Native scientific studies to produce management plans for whole wilderness systems.

The perspective of Alaskan subsistence peoples is both ancient and spanking new. In a time when even physicists remind us that we are influential parts of every natural system we try to observe, Alaska Natives show how they have learned to participate in their ecosystems while preserving their wild wholeness. As organizational planners struggle to make corporations and institutions more responsive and responsible, many subsistence people in Alaska are attempting to conduct their corporations with consensus decision-making, distributed authority, and planning criteria that consider decades and centuries rather than fiscal years. A science that has become mechanized and dehumanized in industrial cultures can be transformed by these hunting people into a daily tool for better living. Theorists who program their ever-expanding computers to model the dynamics of whole systems could learn much from Native subsistence peoples who have long since internalized the wilderness systems in which they are active participants. Many of the most sophisticated new ideas of the industrial intellect are put into practice every day in the Alaskan wilderness.

Most Alaska Native organizations operate responsibly and with care for the land. But not all of them, as David Klein, director of the Alaska Cooperative Wildlife Research Unit in Fairbanks, has pointed out: "Many Natives (especially some of those who are corporate managers) are actively promoting land development schemes that are in direct conflict with subsistence uses. There are also direct conflicts between Natives in the same villages who are fishing commercially and those who are fishing for subsistence; ironically, often the same people are doing both on a limited resource. Natives are quick to adopt new technology—it has been essential to their past survival and cultural development—yet often in adapting the use of new technology to their culture (e. g. high-powered rifles, snowmachines, outboards, etc.) there have been periods of detrimental effects on fish and wildlife resources." Alaska Natives, after all, are not immune to the temptations of modern society, and when new technologies are coupled with strong commercial incentives, as they are now in some Native corporations, wisdom is in danger of being overwhelmed by greed.

It is uncertain whether we will be able to learn from the complexities of subsistence living before they cease to exist. Subsistence peoples of the arctic are seriously threatened from without and from within. Arctic oil development already has had an enormous impact upon Native life, and has created dependencies upon cash and credit that are hard to reconcile with subsistence culture. The pressures to expand that development by opening up the coastal plain of the Arctic National Wildlife Refuge are profound and to many Natives disturbing in their broader implications. "The ability of the resource development industries to take over the policies of the regional Native corporations," says Dalee Sambo of the Inuit Circumpolar Conference, "raises serious questions about the future ability of subsistence hunters to use the new Native political sophistication to defend their land and subsistence hunting." Ironically, on the other hand, the recent decline in oil prices threatens the survival of some Native corporations that depend upon oil revenues, and may weaken their ability to resist takeovers should ANCSA protections expire in 1991 in spite of pending legislation designed to prevent expiration. The problems sometime seem overwhelming, but the adaptive flexibility of their tradition and the robust intelligence of their modern leadership suggest that subsistence peoples may be equal to the challenges they face.

Justice Berger's two-year study of Alaska Native land claims is described in his 1985 book, *Village Journey,* in which he makes a number of recommendations based upon his studies and upon the voluminous testimony of Alaska Natives and other expert consultants. One critical recommendation is that "members of Alaska Native tribes ought to have exclusive hunting and fishing rights and jurisdictions over Native lands and waters, and shared rights and jurisdiction over state and federal lands and waters." The battle over these issues is now heating up, with federal and state agencies, sportsmen's groups, and many legislators solidly against the idea of allowing subsistence peoples to have a major voice in the management of wild lands essential to subsistence life—and with most Natives and their supporters just as solidly in favor of it. The Alaska legislature passed a new subsistence law in May 1986, but subsistence issues remain charged with emotion. Wildlife and its uses evoke passions among virtually all Alaskans—Native and non-Native.

Subsistence, Berger reminds us, is not only an Alaskan issue; it is also a major part of worldwide movements for the rights of indigenous peoples everywhere. The Fourth World is rising with a new sense of self-esteem and with clear notions of necessary bonds between wild lands and the indigenous cultures that depend upon them. Berger emphatically recognizes that "the reemergence of the Fourth World is as great a challenge to the West today as the reemergence of the Third World was during the period of decolonization." A major difference is that Third World claims have been mostly economic and political, while the Fourth World of indigenous peoples, especially in Alaska, also requires preservation of wilderness habitats. In this unfolding struggle, Berger believes that Alaska's subsistence peoples "occupy the moral high ground."

There is much to be learned from the Native people who share in the rich and risky subsistence life of the Arctic National Wildlife Refuge and other parts of wild Alaska. They are not relics of a forgotten past, but fully modern human beings coping with contemporary reality, as we all must. They live in the same present that faces everyone who wakes up to a newscast. Yet they have at least two gifts that most people have lost: most understand deeply their relationship to wild land, and they honor the remembrance of their past. Their task, and ours, is to discover how these treasures can combine to form a future.

All people are subsistence people. Life must feed upon other life; no disguises will change that fact, although they may help us to forget it. Agricultural and industrial civilizations hire specialists to provide food and to set the table, rendering invisible the necessary taking of plant and animal life that sustains us all. But deep within us, there is a vague but profound recollection that we were once a part of wilderness in direct and meaningful personal relationships with the living creatures sharing our context. Hunting and gathering are not only parts of the human past, but also aspects of the human psyche. If Alaska Natives can find ways for subsistence culture to endure in the modern world, they will preserve for all of us the special form of consciousness that awakens to read the messages written in every wilderness day.

JOSEPH W. MEEKER, whose "Some Earthly Speculations" appeared in our Spring 1986 issue, is the author of *Spheres of Life: An Introduction to World Ecology* and *The Comedy of Survival: Studies in Literary Ecology,* and is editor of *Minding the Earth Quarterly: A Thinly-Disguised Journal of Environmental Ethics.* He currently teaches graduate studies in whole systems design at Antioch University, Seattle, Washington.

Amplifications

Continuing Notes on the Land Ethic

Pursuing an Early American

BY CHARLES BOWDEN

The men stand on the runway and talk of Nam, Beirut, Grenada and wonder about the possibilities of Central America. Two fixed wing aircraft and three choppers wait on the cool cement this morning. The men are pilots and they savor war news, old wars, recent wars, future wars. Some of the men are in the Air Force and some are now out but the taste of action, the chance to be there, to be where it is really happening, tugs at them. They believe in American might and they are wounded by each American humiliation. Iran, oh yes, Iran, they say, that must not happen again.

The tiny runway lies a few miles out of Ajo, a dying Arizona copper town about fifty miles north of the Mexican line. The slabs were poured in World War II to train pilots for Europe and Asia. When that war fell away, the installation went to ruin. Weeds peek between the cracks in the concrete, the old officers' quarters just to the East has become a country club for the small community's few copper executives.

I lie on the runway and listen to the talk. I have never been in any army or any war but I am not immune to these feelings. The Air Force machines whip up a martial ardor in the men, military and civilian alike. Words stenciled across the chopper act as cue cards:

EXIT RELEASE
PULL SLIDE
BACK ASST.
OPERATING LIMITS
DANGER

We are on a set and the set makes us all actors.

Off to the west, on Childs Mountain, a new military outpost pokes up against the horizon. Here millions of dollars of computers and radio equipment and high tech witchcraft monitors all the firing on the gunnery range to the north and west. There is talk of lasers teasing the targets, of drones being towed like cows for practice shooting. Out there the desert is littered with brass and people sneak in to salvage it. Sometimes they get blown up. Sometimes they die of thirst.

We wait to go into that shooting gallery. The day is scheduled to be a cold day—one in which the Air Force will refrain from clotting the sky with hot rounds.

We will not trigger cannons. We prefer nets. And we don't stalk the enemies of the state but pursue a more slippery prey, a life force 10 to 25 million years old.

They have always been Americans. All the fossils and all the living forms of their kind on earth come from North America. Once great herds stretched from southern Canada down into Mexico. The subspecies roaming west of Ajo *(antilocapra americana sonoriensis)* was only identified in 1945, based on an adult female skin and two skulls. The key specimen was killed December 11, 1932. From these bones Americans learned of another American.

We barely know our quarry. We do not know how many there are. We do not know where they go. We do not know how they organize themselves. We do not even know if they drink water. And we cannot imagine what they think.

They are commonly called Sonoran pronghorn. They occupy a small patch of southwestern Arizona and northwestern Sonora. Maybe 300 or 400 survive on the surface of the earth, perhaps 75 to 100, we hope, romp on the American side of the fence. Once they roamed across the Colorado River deep into California and for more than 100 miles east of Ajo to the edges of Tucson and Phoenix. The ways of man and man's beasts have driven them deep into the dry heat of the desert and here they linger, an echo of a world largely slaughtered long ago.

Mexico has not permitted a legal hunt since 1922 but this law is sometimes winked at. Twenty years ago, four heads from Mexico were seized in a Tucson taxidermy shop. Today, in Sonora, the killing continues disguised with weird government permits and thick bundles of cash slid under the table. In the world of trophy hunting, there are always a few sports who go off the rails and become strange Noahs filling their death ships with one of each species.

On the American side, the antelope now roam over about 2.5 million acres. This is the place where moisture is a dream. At Ajo, the average annual rainfall is 9.1 inches. And 130 miles to the west at Yuma, 3.38 inches. And some years it forgets to rain.

The pronghorn blend so well into this minimal landscape that they are almost invisible. I have spoken to game officials that patrol this turf who have gone for weeks and weeks without sighting one. A recent survey turned up only 13 in three days of flying.

They survive here because the military needs a place to train for war and this kind of work keeps just about everyone else out—the poachers, the cattle, the hurly burly of 20th century ways and means. The land in the military gunsights is part of the Cabeza Prieta National Wildlife Refuge plus the Luke-Williams Gunnery range. Naturally, the Air Force did not originally consider if rare antelope bounced along on their playing field—or anything else for that matter. But now that the subspecies has been brought to their attention, they are willing to make a good show of it. Luke is

bucking to win the Air Force conservation award and tending to endangered antelope looks like a good way.

So they've loaned pilots and aircraft for this hunt. Along with personnel from the U.S. Fish and Wildlife Service and the Arizona Game and Fish Department, the Air Force men will join in an effort to capture, examine and radio collar at least five antelope. It is hoped that something will be learned that will help pull the small bands back from the abyss of extinction.

At 7 a.m. the two planes take off to scout up some antelope. The choppers and the bulk of us wait around the runway for the call, a wait that could go on and on and on. The hunt has all sorts of little quirks: the antelope cannot be pursued if the air temperature exceeds 80 degrees because they might die from heat stress; they cannot be held captive for more than five minutes for the same reason.

Because we are so ignorant of the antelopes' habits, they cannot be baited into a trap—we have no idea what they like to eat. A new technique, firing a net from a gun powered by a .308 cartridge has come into recent vogue (no wildlife has yet perished by the method) and this is the weapon of choice this morning.

While the antelope is rare, the bureaucratic agreement on this old runway is even rarer. For several years, the various agencies have haggled over details, money, tactics. It is a wonder the antelope managed to survive long enough to be chased by helicopters and manhandled by human beings.

One federal official has flown in from Albuquerque, several state experts have come from Phoenix, and a small herd of television and print reporters have journeyed from Tucson. None of us come here with terribly clean hands.

The Air Force rules lay down all kinds of restrictions out in the desert Refuge—no plane should normally fly below 3000 feet or even below 500 feet. I've seen them 100 feet off the ground and one pilot boasted to a friend of mine that he cracked the sound barrier at 25 feet off the ground. There are areas where no firing should take place, like waterholes. I've found spent rockets lying around waterholes favored by bighorn sheep. But then, we're hardly likely to recruit men good at flying fighter planes who tend to obey rules. Anyway, the antelope seem to adjust to the jets—they've been sighted feeding with aircraft at 500 feet and have not even raised their heads.

The people from the state Game and Fish Department have a checkered past with antelope, one of the great failures of a general wildlife revival in the state. Antelope can't seem to master jumping fences and as the state goes to more barbed wire and little ranchette estates, remaining sanctuaries for the species are disappearing. The Department responds by haggling a little here and there and periodically shooting coyotes from airplanes to cut down predation of the fawn crop.

The U.S. Fish and Wildlife people have a few bad moments to live with too. As lackeys of the state's cattle interests they almost single handedly exterminated the wolf (last den with pups was found in 1943 and slaughtered) and grizzly bear (last sighted in 1936).

I myself have become almost a functionary for the Air Force in this antelope business, merrily cranking out newspaper stories lauding their efforts in the hope they will accept the delusion and make a major effort to safeguard the beasts.

Meanwhile the antelope have been run over by cars on highway, poached here and there, drowned in irrigation ditches. And survived. So here we are armed with big machines and science to lend them a helping hand.

At 9 a.m. the scouts call in that antelope have been sighted and we all race for our choppers like Green Berets. We cross the black mountains and cruise the creosote flats and within 20 minutes the band is found. Nine antelope romp along at 50 miles an hour. Two choppers stay 100 feet off the desert floor and the capture chopper drops down to about eight feet.

The machine dogs the animals and they wheel and turn and charge and spin trying to shake the strange predator. One man hangs out the open door clutching the gun. After three minutes of harassing the band to wear them down, the man fires and an antelope goes down trapped in the maze of an orange net. All three craft land and we race toward our quarry.

Huge spikes drink the beast's blood, a thermometer is rammed up its ass and a white radio collar snapped on the neck. The antelope is blindfolded to calm it and this spares us the wild look in its eyes. The animal writhes and the body temperature, normally 98 or 99, jumps to 104. We all jockey in and touch. We cannot resist.

There are four or five billion of us, a couple of dozen of them. Everyone must touch.

For years there has been speculation that the pronghorn were mute. They are not.

A deep rattling moan escapes the animal and the warm desert air suddenly chills. No one can mistake the message of the sound, the grieving powering it.

A kind of collision between cultures has taken place. Huge machines that fly at 80 mph and drink over 70 gallons an hour have snared an organism that has raced at 50 mph for millions of years.

The sound keeps coming and coming. We have violated some deep important thing and we cannot doubt this fact.

CHARLES BOWDEN has taught American intellectual history at the University of Illinois, has worked as a researcher in arid lands and American history, been a radio and television scriptwriter, and spent several years as a newspaper reporter in Tucson, Arizona. He is the author of *Killing the Hidden Waters* and (with Lewis Kreinberg) *Street Signs Chicago: Neighborhood and Other Illusions of Big-City Life*. "In Pursuit of an Early American" has been excerpted from his upcoming book, *Blue Desert*, a working journalist's relentless view of life in the Sunbelt, to be published by the University of Arizona Press on October 20.

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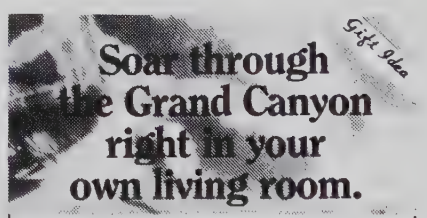

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FREE DETAILS

Books for the Wilderness

BY DENNIS DRABELLE

Cadillac Desert: The American West and its Disappearing Water

by Marc P. Reisner
(Viking; 544 pp.; $22.95.)

Meet Floyd Dominy. Actually, if you're a regular reader of Eco-Lit, chances are you already have. Head of the Bureau of Reclamation, the Interior Department's dam-building agency, during its heyday in the '50s and '60s, Dominy served as a foil to conservationist David Brower in John McPhee's *Encounters with the Archdruid.* Now, fifteen years later, a far more candid portrait of Dominy emerges in Marc P. Reisner's *Cadillac Desert: The American West and its Disappearing Water,* a portrait so damning that the book might almost have been called *Encounters with the Archfiend.*

Reisner's Dominy is a womanizer of preposterous appetites, a ruthless browbeater of subordinates, a schemer without scruple. One example of his questionable approach to public policy occurred after he had signed a $250,000 design agreement for a new Bureau building without authorization from his superiors. After checking with Interior Secretary Stewart Udall, Under Secretary James Carr fired off a letter rescinding the agreement. Unfazed, Dominy suborned a mailroom clerk to "sit on" the letter until Dominy talked Udall into changing his mind.

In a final assessment of his career, Reisner writes that Dominy "had begun as a crusader, a person who at least appeared to possess a sense of fairness and justice. . . . He ended his term as a zealot, blind to injustice, locked in a mad-dog campaign against the environmental movement. . . ."

As time after time Reisner demonstrates the cost ineffectiveness of monstrous dams and irrigation projects—not to mention the infighting between the Bureau and Corps over which would get to strangle which river—an overwhelming impression of mindless servitude assails the reader. So desperate to keep busy were the employees of these once-proud agencies that they drummed up such projects as cotton-growing in the desert and dam-building in the middle of earthquake zones. One such project, the Teton Dam in Idaho, collapsed in 1976. Investigators have never been able to figure out why, although the dam had so many problems of siting and construction that one is free to choose among multiple scenarios. Another project, the Belle Fourche in South Dakota, had about eighteen justifications for construction—none of which made good sense. Reisner calls it "the Bureau's preeminent fiasco. . . . Congressmen hostile to the Reclamation program loved to crucify Belle Fourche at appropriations time; it was like stoning a flightless auk."

That is colorful writing and not atypical of Reisner's style throughout. A former editor with the Natural Resources Defense Council, he has been at work on this material since 1979, and it shows. I can't imagine anyone writing a more trenchant and comprehensive indictment of U.S. water policy in the West for a long time to come.

What makes the book a joy to read is Reisner's decision to explain the issues via the personalities—of whom Dominy is only the most lurid example—who originally framed them. Thus, courtesy of the venerable Horace Albright, second director of the Park Service, we get a vivid sketch of water czar William Mulholland, the man who destroyed Owens Valley to water Los Angeles. Seated at the same table with Mulholland, Albright had to endure a lecture on what should be done with Yosemite Valley. Hire a dozen of the world's best photographers, Mulholland urged, and give them the run of the place for a year. Take the results and print books full of Valley shots. "And then," Mulholland said, "do you know what I would do? I'd go in there and build a dam from one side of that valley to the other and *stop the Goddamned waste!*"

Yosemite Falls, Yosemite Valley—dam it? MARTIN LITTON

Now there's a water-development proposal for you—one that even Dominy lacked the hubris to make—the *ne plus ultra* of environmental mayhem. No, I'm wrong. Reisner discusses an even more egregious proposal in the works: a North American Water and Power Alliance (NAWAPA) scheme to replace water from dwindling U.S. aquifers like the Ogalalla with British Columbia's Mackenzie and Columbia rivers. You might suppose that the good people of British Columbia would like to hang onto their rivers, thank you, but Reisner closes his book with an ominous quote. Asked not long ago whether he was advocating exportation of water to the United States, the provincial premier of British Columbia answered "no." Then he added, "But come see me in twenty years."

The Machinery of Nature

by Paul R. Ehrlich
(Simon and Schuster; 320 pp.; $18.95.)

Paul Ehrlich is one of a small but growing number of scientists who can write for lay readers in an appealing way. In his previous books (some co-authored by his wife, Anne), he has explicated the human population explosion, the extinction of species, and the relationship between race and intelligence. Now, in *The Machinery of Nature,* he sums up the science of ecology, with special emphasis on his own forte, the study of animal populations.

Ehrlich is notably good at showing how the narrow-gauge results of precise experimentation can help demonstrate larger truths. One of the most dramatic biological experiments ever devised centered on a British moth. Once "peppered" on their wings for camouflage against the lichen-covered tree trunks they frequented, the moths became black (melanic) as the nineteenth century wore on. Why? "Pollution from coal

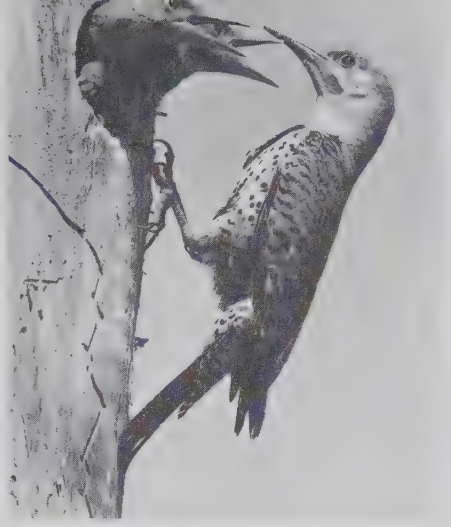
burning had killed the lichens and blackened the tree trunks," Ehrlich writes. After scientists placed moths of both hues on various trees, a series of photographs revealed the following. "On a blackened trunk, birds fly into view and work their way up and down the trunk, devouring the mottled moths and missing the melanics. On lichen-covered trunks, the opposite occurs; the birds miss the mottled moths and eat the melanic ones." There you have natural selection in the throes of selecting.

Another painstaking bit of work, Robert McArthur's discovery of what attracts birds to a woodland, has yielded more practical applications. Relying on what Ehrlich calls his "bird watcher's intuition," McArthur assumed there was something about the vertical pattern of vegetation that made a site popular. Using a tape measure and a white board, he sketched a vegetative profile of a given area. His conclusion: Diversity of bird species in a locale depended not on the diversity of the plant and tree species themselves but on the diversity of their height.

The practicality of this discovery is evident. "If a timber company . . . wished to replant a logged area in a way that would enhance bird diversity, it would know that planting to provide understory vegetation (layers of plants beneath the forest canopy and shaded by it) as well as large trees would likely be more important than how many trees were planted."

In an excursus on the Serengeti ecosystem of northern Tanzania and southern Kenya, Ehrlich provides a superb ecological orientation for anyone inclined to go there to observe game. He recommends game ranching as a food source to supplant cattle raising in Africa's sub-Sahara region. Even if the practice might be slightly less productive than cattle ranching, he argues, the long-term gain from slowing desertification—caused primarily by the trampling hooves of cattle—would be worth it. He recognizes, however, that tradition is against him: In East Africa, game animals are poachables, and cows are symbols of wealth.

Some of Ehrlich's conclusions may perplex aficionados of wilderness. He foresees the need for scientists to commandeer wilderness areas and manage them as habitat for wild creatures: "Much more of the planet," he reasons, "will inevitably have been converted to simple agricultural eco-systems in the struggle to feed humanity's rapidly growing populations." Though not ignoble, the dedication of wilderness areas to zoological purposes gives one pause.



Red-shafted flicker and young.
HARRY ENGELS

Ehrlich urges that governments spend more money—a great deal more money—on basic biological research. He scoffs at the American war on cancer as an example of misplaced priorities: "Millions more lives would have been saved," he contends, "if the same funds had been put into a 'war on smoking.' " He accuses "middle-aged congressmen" of pouring money into curing diseases that afflict them and their constituents while ignoring the ecological threats to humanity itself posed by destruction of tropical rainforests, acid rain, and other global phenomena.

From moth coloration to planetary survival. It's a long trip, but, with Ehrlich as guide, an exhilarating and illuminating one.

The Late, Great Lakes: An Environmental History

by William Ashworth
(Knopf; 274 pp.; $17.95.)

The shrewdness of Marc Reisner's approach to issues in *Cadillac Desert* becomes all the more evident in contrast with William Ashworth's *The Late, Great Lakes: An Environmental History.* Ashworth is a veteran environmental writer whose book on U.S. water policy, *Nor Any Drop to Drink,* remains perhaps the best brief introduction to the topic. Despite being an "outsider" (he lives in Ashland, Oregon), he evinces an impressive mastery of Great Lakes ecology and politics. What he fails to do, unfortunately, is present them compellingly. Lacking character portraits like those of Dominy and Mulholland, Ashworth's book reads too much like a Ph.D. thesis.

That being said, *The Late, Great Lakes* is still indispensable for anyone wanting to bone up on the continent's Fifth Coast, which borders those five inland seas (to give them their correct nomenclature). Ashworth has a knack for digging past comforting headlines to the brutal facts underneath. Yes, predatory sea lampreys have been brought under control. The problem is that they are beginning to spawn not in streams but in the lakes themselves, where the efficacy of poisoning them with a highly selective chemical called TFM is being questioned because of fear of dispersion: How do you prevent the chemical from spreading via the affected lampreys?

Yes, Lake Erie looks better and tests out purer than it did a decade ago. But the levels of all five lakes have risen in the last five years, and we may be seeing only a dilution of the pollution.

Yes, the size of the Great Lakes fisheries harvest has remained fairly constant over the years. But its value has "dropped precipitously. Commercial fishing operations brought in $14 million in 1946. Less than twenty years later, fishing revenues had declined by nearly 66 percent, to $5 million. The reason was simple: With the trout and whitefish gone, and the herring declining, the fishermen were falling back on less desirable species such as smelt, and lawyer and perch. These met catch quotas but not expenses. All along the Fifth Coast, bankruptcy lawyers (human variety) did a fine business."

Ashworth is no Luddite. "Nobody wants to go back to the days of clipper schooners," he writes. But he would forestall the deepening and widening, for capacity use, of present shipping channels. And he would draw the line at exporting Great Lakes water to the thirsty West. (That's right, those indefatigable connivers in the Ogalalla states have not confined their gazes to British Columbia.) Sell the *availability* of Great Lakes water, Ashworth cautions (availability as a medium of transportation, the perennial source of its greatest value), but do not under any circumstances sell the water itself. Not if you want to preserve some semblance of economic well-being and ecological balance within the Basin.

Like Reisner, however, Ashworth concludes on a dark note. If the price goes high enough, he suggests, the temptation for the region to offer itself up as a national drainage area may become all but irresistible.

DENNIS DRABELLE is a frequent contributor to many publications, including *Wilderness* and *Smithsonian* magazines.

PHILIP HYDE

"The only indispensable narrative history of the public lands —

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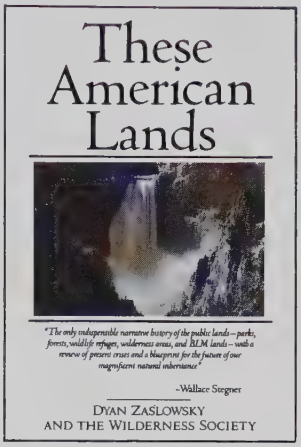
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DYAN ZASLOWSKY AND THE WILDERNESS SOCIETY

"*These American Lands* provides exactly the up-to-date and comprehensive basic information every lover of the land should have."

—Edward Abbey

THIS AUTHORITATIVE AND stirring assessment of our public lands—the first book ever published to give the history and propose the future of each unit of a federal trust that today accounts for approximately one-third of America's landmass—begins with the establishment of Yellowstone National Park 125 years ago.

The national park concept, which the historian Lord Bryce called the best idea to come out of the New World, was the first attempt by a national government to preserve land for future generations.

The impulse to preserve the nation's natural heritage has become a model throughout the world, but the fight to retain public land unspoiled—from the Everglades to Arctic mountain ranges in Alaska, together with habitats for bald eagles and grizzly bears, golden trout, redwoods and high-grass prairies—is never ending, as this lively and dramatic history of America reveals.

The preservationist idea did not come naturally: the myth of the land's superabundance dominated the thinking of Americans even after the frontier was officially closed, one hundred years ago. Frontier greed and carelessness, combined with business and political pressures for local control, continue to threaten our parks, forests, and wilderness lands today. The battles over these lands, especially as their outcomes determine present and future patterns of land use, will continue to define our civilization. *These American Lands* assesses management policy within each unit, and demonstrates why the citizen's vigilance is necessary today if future Americans are to look upon our natural legacy as the crowning achievement of the twentieth century.

A useful appendix lists all public land acreage by state, the major public land laws, the federal land-managing agencies, plus each public land system: parks, monuments, forests, grasslands, reserve lands (BLM), wildlife refuges, wilderness areas, trails, wild and scenic rivers.

Gaylord Nelson reminds us how sorry is the argument that we cannot afford environmental goals, "that it costs too much to protect the integrity of the air, water, and soil; that it is a misappropriation of the taxpayer's hard-earned money to buy new parklands and wildlife refuges; that wilderness designation 'locks up' oil, gas, timber, and other resources necessary to the continued health and growth of the economy. We have to choose, it is argued, between the environment and the economy."

This old argument is as wrong now as when it was being used to oppose the land conservation movement spawned by Teddy Roosevelt. Gaylord Nelson continues, "when it is asked how much it will cost to protect the environment, one more question should be asked: How much will it cost our civilization if we do not?

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Viewpoint: Greenhouse Cooperation

BY JAMES GUSTAVE SPETH

The overheating of the earth, caused by our continuing pollution of the atmosphere, is no longer a problem just for our children. The global warming—and the sea level rises, agricultural disruption, and unpredictable weather it causes—is now predicted in our lifetimes, if current trends continue.

As senators and scientists agreed at congressional hearings earlier this year, there is no longer time simply for more study, research, and analysis of the climate changes brought about by the greenhouse effect and depletion of the earth's protective ozone layer.

The carbon dioxide we spew into the air from burning coal and oil, plus other man-made pollutants, trap the earth's heat, as a greenhouse does. One of the chemicals aggravating the greenhouse effect—chlorofluorocarbons (CFCs) used in aerosols, refrigeration and styrofoam—is also destroying the earth's ozone layer, which protects us from cancers caused by the sun's ultraviolet rays.

There is no question that the effects of these atmospheric alterations could be profound. They include flooding of coastal areas, changes in ocean currents, effects on human health, more frequent droughts over wide areas, and major changes in rainfall patterns.

In only twenty years, we will probably feel the damage wrought by the man-made gases and pollutants we and past generations have *already* emitted into the atmosphere. The earth's temperature then could be nearly two degrees warmer, "the warmest the earth has been in the last 100,000 years," according to Dr. James Hansen of NASA. The Department of Energy summed up the stakes in grim terms: "Human effects on atmospheric composition may yet overwhelm the life support system crafted in nature over billions of years."

Increasingly, scientists and policymakers are no longer asking "whether" these changes will occur, but "when," with what effects, and the most difficult question of all: what to do?

International negotiations will be at center stage if society is going to deal with the greenhouse effect. The need for the United States and the Soviet Union to address the greenhouse issue is critical. A major increase in global temperatures may radically change the productivity of the two countries' grain belts. The United States and the Soviet Union together own 44 percent of total world coal reserves—and are jointly responsible for almost 40 percent of the carbon dioxide emitted into the atmosphere.

U.S. and Soviet scientists were among the eighty conferees from twenty-nine nations who urged at a scientific meeting late last year that "scientists and policymakers should begin an active collaboration to explore the effectiveness of alternative policies and adjustments."

A discussion of the greenhouse issue could take place at a U.S.-U.S.S.R. summit. Positive results could include a joint statement describing the problem and what is at stake; the establishment of a panel with the highest level of experts from both countries; and a mandate to the panel to report back with recommendations for further cooperation.

Such an activity would be a valuable concrete outcome of the summit and a widely recognized instance of sensible, mutually beneficial cooperation.

Another essential action is an international effort to halt tropical deforestation. As forests are cut and burned, carbon stored in the vegetation and soil is released into the atmosphere, aggravating the greenhouse effect. Emissions from biotic sources such as tropical forests are currently estimated to equal 20 percent of carbon dioxide emissions from fossil fuel use.

The United States actually has a double stake in the forests of the tropics. They are the repositories of perhaps 50 percent of the genetic wealth of the planet—a vast storehouse for the development of new seeds, chemicals, pharmaceuticals, and other materials, not to mention the phenomenal wildlife. Our stake in these forests is so great that one must wonder whether some type of global bargain should not be considered—one involving the easing of international debt burdens in exchange for forest conservation. Importantly, of the top seventeen most heavily indebted countries, twelve are destroying their tropical forests at extraordinarily fast rates, contributing to the world's annual loss of 27 million acres: Bolivia, Brazil, Colombia, Costa Rica, Ecuador, Ivory Coast, Jamaica, Mexico, Nigeria, Peru, Philippines, and Venezuela.

More immediate and attainable policy changes must also be made, among them a ban on nonessential uses of CFCs and a limit on their future production, and promotion of steady increases in energy efficiency in vehicles, homes, and industry. Despite lower fuel prices, this is not the time to reduce our efforts to conserve energy and introduce non-polluting energy sources such as solar and wind energy.

Environmental impact statements should be prepared on all projects that may contribute to or be affected by climate change, thereby identifying further opportunities to both prevent and adapt.

In the long run we should consider more aggressive actions such as carbon-based fuel taxes to discourage excessive use of coal and shale and to finance reforestation, solar energy development, and energy efficiency technologies.

In altering the earth's climate, we are carrying out a giant planetary experiment with uncertain but potentially devastating consequences. The responsibility for the greenhouse problem is ours; responding to it can no longer be safely postponed. The United States, the Soviet Union, and other countries should now act in a way that recognizes our role as trustees of the earth for this and future generations.

JAMES GUSTAVE SPETH is the President of the World Resources Institute, a Washington-based policy research center.

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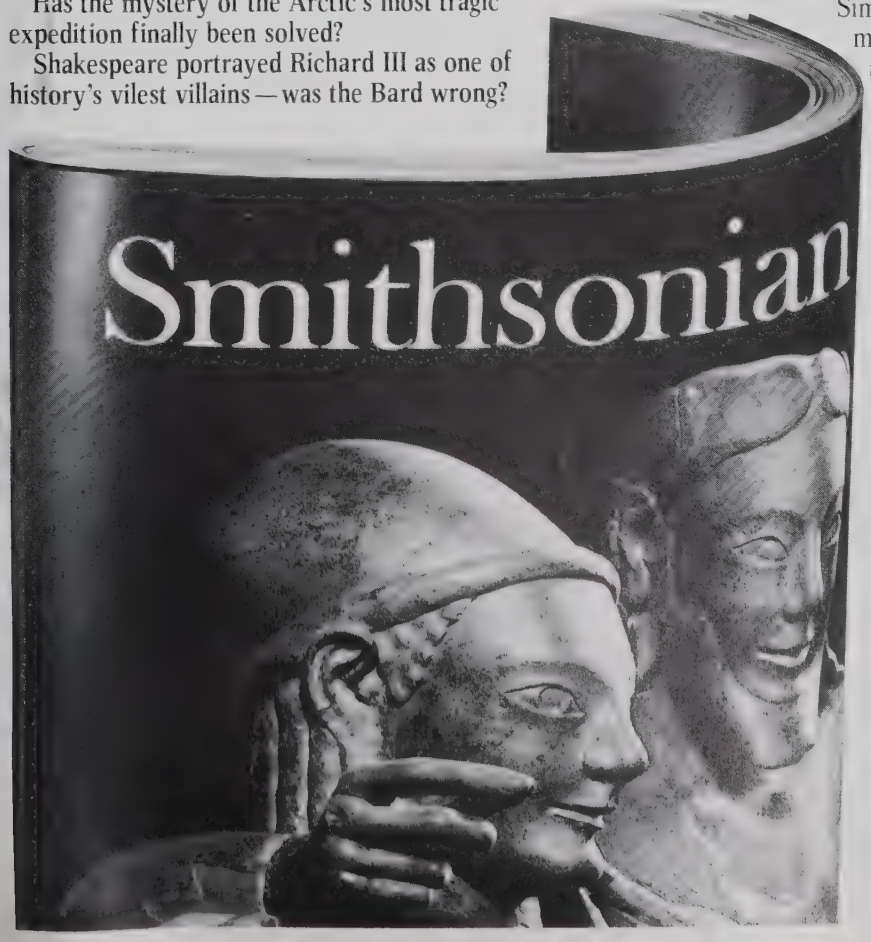

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—MARGARET E. MURIE
Two in the Far North (1962)

Defenders

Sept/Oct 87

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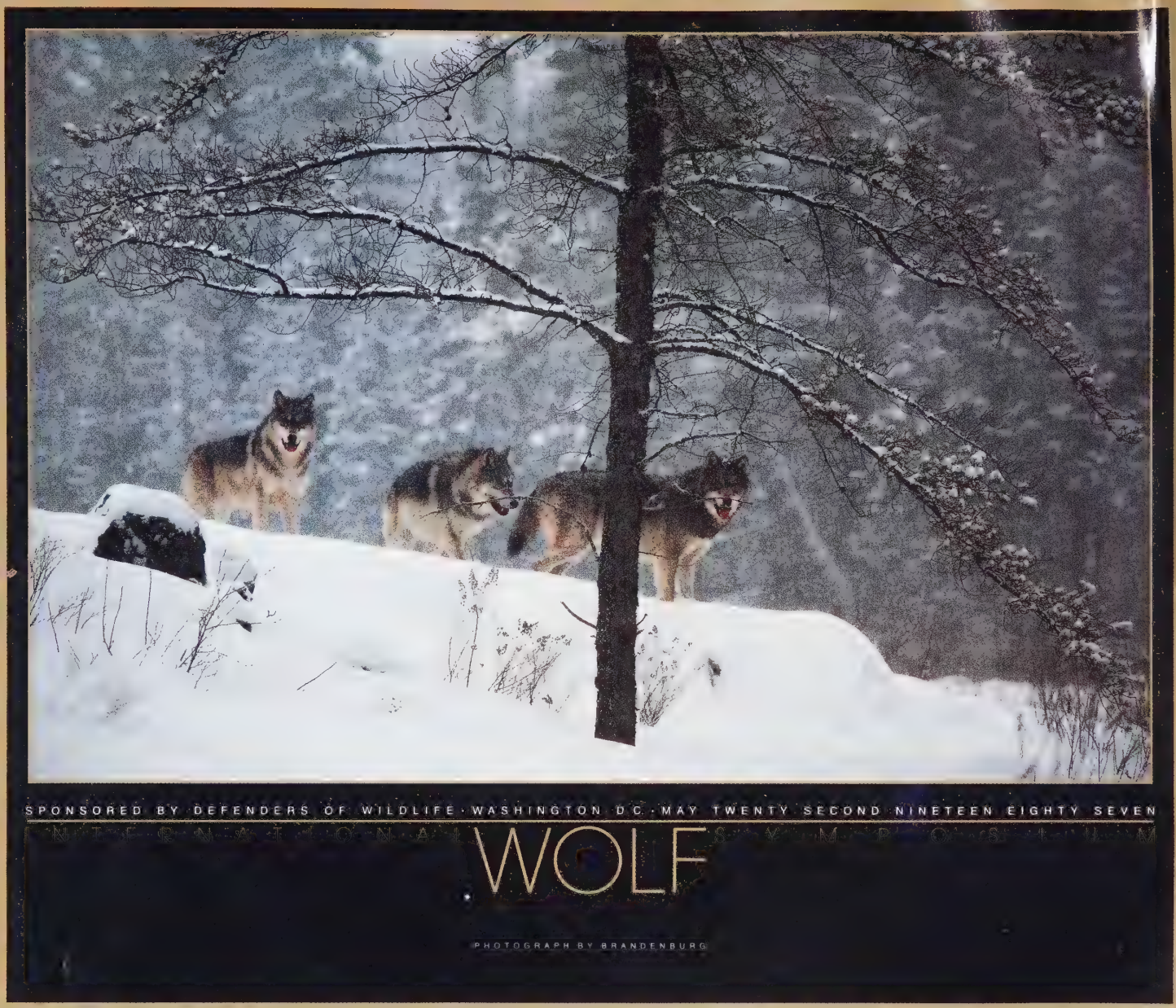
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WOLF
PHOTOGRAPH BY BRANDENBURG

Actual size 26"x22"

HELP US PROTECT THEIR FUTURE

Defenders of Wildlife is pleased to offer this beautiful commemorative poster as both a tribute to the wolf and a symbol of the importance of the International Wolf Symposium that was held in Washington in May. This striking poster features Minnesota photographer Jim Brandenburg's image of three young wolves in the Boundary Waters Canoe Area Wilderness of Minnesota.

You can help Defenders promote wolf protection and recovery by purchasing one or more of these beautiful posters for $15 each, or two for $25.

TO ORDER YOUR WOLF POSTERS USE THE ORDER FORM ON PAGE 45.

Defenders

VOLUME 62, NUMBER 5 | MAGAZINE OF DEFENDERS OF WILDLIFE | SEPTEMBER/OCTOBER 1987

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COVER: Not long after birth, a barren-ground caribou calf tries out its legs near Camden Bay on the Arctic National Wildlife Refuge coastal plain, calving ground of the Porcupine caribou herd. Photo by Wilbur Mills. Back cover: Hoped-for relief from insects has drawn caribou to ice floes at the Beaufort Sea edge. Photo by Dennis and Debbie Miller. This special issue of DEFENDERS *examines the conservationist hope to see ANWR's coastal plain protected as wilderness and the hope of oil companies, instead, to explore it for possible oil and gas.*

James G. Deane, *Editor*
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William W. Betts, Jr., Gary L. Bogue, Douglas H. Chadwick, Delphine Haley, Jack Horan, Erich Hoyt, Napier Shelton, *Field Correspondents*

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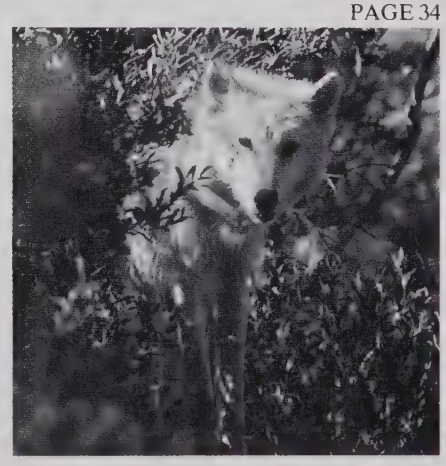

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WILDLIFE TRADE OUT OF CONTROL?

Delegates from 87 nations and representatives of more than 100 nongovernmental organizations (NGOs) addressed a packed agenda at the sixth biennial meeting of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in Ottawa in July. Defenders endangered species specialists Ginger Merchant Meese and John Fitzgerald were among the NGO representatives. CITES, established in 1972, is facing a budget crisis because of the decline in the value of the dollar and failure of numerous countries to pay their assessments for the operations of the secretariat. A bigger budget was adopted, but shortfalls are anticipated. NGO representatives, who have all privileges except the vote, created an ad hoc committee on finance that will meet again this fall to explore supplemental funding options. But more important is CITES' failure thus far to bring the global wildlife trade under effective control.

This failure is most salient with respect to Africa's hard-pressed elephants and rhinos. For both species enforcement has been hit-or-miss. Poachers and illegal traders have not been pursued, and inspection facilities at entry and transshipment ports have been inadequate. Africa's elephant population has dropped 36 percent in the last six years. The drop in Kenya—from 65,000 to 35,000—is particularly grave. Tusks of 89,000 elephants are estimated to have entered the trade illegally in the last year alone. The decline of black rhinos has been catastrophic. There are only 4,000 left. Burundi and the United Arab Emirates are the major places of entry for both illegal ivory and rhino horns.

CITES delegates adopted a resolution calling on member nations to ban all trade in rhino horns and other rhino products. Another resolution called on parties to the convention to use all possible means—economic, diplomatic and political—to press Burundi and the UAE to prohibit the illegal trade in elephant ivory. The UAE notified the secretariat that it is withdrawing from CITES. Burundi, which was being pressed to join, has declined to do so or to cooperate as a non-party. Even some major developed countries are ignoring CITES resolutions on trade in listed species, notably Austria, France and Japan.

Quotas for crocodile exports were generally increased, reflecting the improving status of some populations. Quotas for leopard souvenirs and hunting trophies also were increased. But significantly, African nations reaffirmed their desire not to resume commercial trade in leopard skins, banned for many years. A French proposal to downlist sea turtle populations for ranching purposes was soundly defeated. Two macaw and one cockatoo species were upgraded to Appendix One, which prohibits international commercial trade in species threatened with extinction. Hummingbirds, bustards and two butterfly genera were added to Appendix Two, which lists traded species that CITES parties wish brought under regulation. Studies will determine whether or not trade is harmful. A proposal from Argentina to transfer to Appendix One the coastal population in Chile of a large and extraordinarily slow-growing tree, the alerce, was approved over the opposition of the Chilean governmental delegation. The tree, cut for timber, takes hundreds of years to reach harvestable size. Many are thousands of years old.

Can CITES become more effective in combating the destructive global wildlife trade? The fate of many species hangs on the answer.

Agency for International Development

GOING, GOING . . . *Illegal trade in rhino horns has drastically reduced Africa's black rhino numbers. These are in Tanzania's Ngorongoro Crater.*

DEVELOPMENT BANK HITS AMAZON ROAD

Like its big neighbor, the World Bank, the Washington-based Inter-American Development Bank apparently is starting to heed critics who have charged that its loan policies have disregarded the environment. Early in August, the IDB warned Brazil that it might suspend disbursement of $58.5 million in loans for a controversial 209-mile highway being built in the Amazon states of Rondonia and Acre. The bank said it was giving Brazil 60 days to comply fully with contractual safeguards for the area being traversed by the road and for the indigeneous Indian population.

Both the bank's United States executive director and two leaders of

the Senate Foreign Operations Appropriations Subcommittee, Senators Robert W. Kasten, Jr. (R-Wisconsin) and Daniel Inouye (D-Hawaii), had called for the crackdown. They threatened to cut off U.S. funds from the bank unless it responded. Similar criticism from Capitol Hill and conservationists recently helped spur the World Bank into announcing an expansion of its environmental staff and other reforms.

KELLY RESIGNS DEFENDERS POST

Joyce M. Kelly resigned as president of Defenders of Wildlife on July 24. She had been president since May of last year. In announcing the resignation, Karin P. Sheldon, chair of Defenders' board of directors, said: "As a result of Joyce Kelly's leadership, Defenders clearly has achieved more visibility and influence in the fight for America's wildlife. We appreciate her enthusiasm, energy and dedication."

Kelly, who in her Defenders post led efforts for wolf reintroduction and recovery, nongame wildlife protection and increased emphasis on endangered species recovery, said she planned to continue her leadership in a different role in the environmental movement. A search committee was appointed to fill the position.

TURTLE-EXCLUDER USE IS ORDERED

After long negotiation, the Commerce Department has ordered use of TEDs—turtle-excluder devices—by March, 1979, by all shrimp fishermen operating in offshore waters between North Carolina and Texas. The TED, designed to fit into the neck of shrimp trawls to prevent drowning of sea turtles taken accidentally, has been pushed by environmentalists and opposed by the industry for several years ("TEDS: Salvation for Sea Turtles?" DEFENDERS, Jan/Feb 87). A rider attached to the 1987 appropriation bill by Louisiana Senator J. Bennett Johnston (D) and Representative Bob Livingston (R) has prevented the National Marine Fisheries Service from using funds on TED enforcement, but it expires September 30.

Shrimp boats operating between the shore and barrier islands or in inlets and estuaries will be exempt if they limit their trawling periods to 90 minutes, the maximum time for saving drowning turtles. Some 70 percent of all shrimpers work in these inshore areas, using smaller boats, nets and crews. Noncompliance and possible lawsuits are expected. Most shrimpers object strenously to the cost and weight of the TEDs. NMFS is trying to develop a better lightweight TED made of net-like webbing.

GW FOREST PLAN BEING RESTUDIED

A controversial management plan for the million-acre George Washington National Forest in Virginia and West Virginia has been withdrawn for further analysis and a rewrite. Defenders and other environmental groups appealed the plan because it would have doubled the timber harvest and more than doubled access-road mileage, to the detriment of wildlife and other natural values. The plan was also appealed by the loggers' Appalachian Forest Management Group and individual loggers, who said timber harvest limits were too low to sustain the local economy. The regional forester has asked Forest Service Chief Dale Robertson to suspend the appeals and permit the forest to operate under the plan until completion of the rewrite, which could take two years. Conservationists are opposing a suspension.

ENDANGERED LIST LOSES ALLIGATORS

The alligator has joined the tiny roster of America's endangered species success stories. The U.S. Fish and Wildlife Service (FWS) on July 25 announced that the alligator, delisted last year in Florida, Louisiana and Texas, now also is considered recovered in the rest of its range (Alabama, Arkansas, Georgia, Mississippi, North and South Carolina and Oklahoma). FWS Director Frank Dunkle credited the recovery to a 20-year effort. "When the alligator was first protected under the Endangered Species Act in 1967, poaching had reduced its numbers so severely that many believed the species would never recover. But with sound management and a vigorous crackdown by state and federal wildlife law-enforcement agents, we've reversed the situation. Today, the American alligator is biologically secure throughout its range," he said.

Only four other species have been delisted as recovered, all in 1985. One was the eastern population of the brown pelican, which made a dramatic comeback from a decline resulting primarily from eggshell thin-

NOTICE TO MEMBERS

NOMINATIONS FOR BOARD OF DIRECTORS DUE OCTOBER 31, 1987

Members wishing to suggest candidates for nomination to Defenders of Wildlife's Board of Directors should submit their suggestions to the Nominating Committee postmarked *no later than October 31, 1987,* and should include a biographical résumé and statement of qualifications for each proposed candidate. The committee particularly is seeking nominees who, in addition to commitment to Defenders' goals, have business and financial experience. The Nominating Committee members are: Mr. William Roe, Chairman; Dr. Donald A. Molde, Mrs. Brenda Thompson Moorman, Mr. Stephen R. Kellert and Dr. Bernard Shanks.

Address all candidate documents, postmarked no later than October 31, 1987, to: Nominating Committee, Defenders of Wildlife, 1244 Nineteenth Street, N.W., Washington, DC 20036.

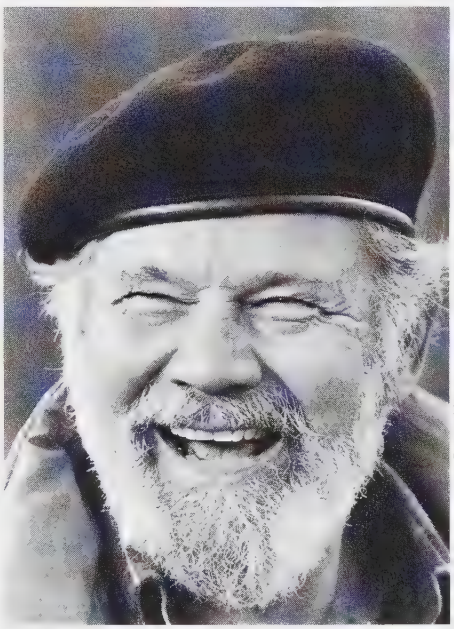
ning caused by DDT before the pesticide was banned in 1972. Three birds on the Pacific island of Palau, a trust territory, suffered heavy losses and habitat damage during World War II but were delisted when they were found to have returned nearly to former levels.

Unfortunately, many other animal and plant species continue to decline. Arizona's Mount Graham red squirrel and the Alabama red-bellied turtle recently were listed as endangered. Newly listed as threatened are the Florida scrub jay, blackside dace, flattened musk turtle, Sacramento Mountains thistle, rough-leaved loosestrife, Georcarpon minimum, Jesup's milkvetch, running buffalo clover, elfin tree fern and Cook's holly.

NORTHERN ROCKIES WOLF PLAN APPROVED

After more than two years of urging by conservationists, the U.S. Fish and Wildlife Service has approved a Rocky Mountain wolf recovery plan calling for restoration of wolves to Yellowstone National Park. The plan also calls for encouraging spontaneous wolf resettlement in wild country in northern Montana and central Idaho, with a goal of ten wolf packs in each of the three areas. Hank Fischer, Defenders northern Rockies representative who has spearheaded the citizen effort, praised the FWS action as a significant milestone. Many Defenders members were among the more than 500 citizens who wrote letters to the service.

Carrying the plan forward will require additional citizen effort, however. The Wyoming congressional delegation has been highly critical of the Yellowstone proposal, and many ranchers in the region are not at all friendly toward wolves. National Park Service Director William P. Mott has said his service would start preparing an environmental impact statement on the Yellowstone project once the plan was approved. He also has stated that he personally favors reintroduction. In late August, however, Mott said in a letter to the Caspar (Wyoming) *Star-Tribune* that the whole reintroduction question "is on hold." He indicated it would stay that way if the Wyoming congressional delegation remains "adamantly opposed." The Mott letter followed strong criticism by Representative Dick Cheney (R-Wyoming) of a published report that the Park Service might proceed with an EIS despite the delegation's stand. Cheney said the delegation will try to block funds for an EIS.



Erik Hill/Anchorage Daily News

OIL CRITIC. *Ex-Governor Hammond says a case hasn't yet been made.*

HAMMOND QUESTIONS REFUGE OIL PLAN

Though Alaska's three-man Republican congressional delegation is gung ho for oil exploration on the Arctic National Wildlife Refuge coastal plain, another leading Alaska Republican has a different view. Former Governor Jay Hammond has written members of the House Interior Committee in Washington saying in effect that a case hasn't yet been made for allowing oil companies to enter the big refuge. Criticizing the Reagan administration for discouraging energy conservation and for stressing extraction "with little thought to long-term consequences," his letter declares: "Given the present energy policies, it would appear that to open ANWR now would risk irreparable damage to a unique resource for another short-term, quick fix of oil—a sugar pill to help us postpone the inevitable day when we plan responsibly for a truly energy efficient future." Hammond calls the refuge "our last great wild stretch" of arctic land. He was governor from 1974 to 1982.

FERRET SEARCH IS STEPPED UP

The Wyoming Game and Fish Department (WGF) lost one of its two newest black-footed ferret kits in July, but at latest report the second was thriving, as were six born earlier in June. One of the males has been dubbed Sully after Governor Mike Sullivan. Current tally of adults and young at the WGF captive-breeding facility: 25. Meanwhile, scientists are stepping up the search for more of the ferrets—America's most endangered mammals—that may still be in the wild. The U.S. Fish and Wildlife Service's National Ecology Center Laboratory in Fort Collins, Colorado, has three roving search teams that go where help is needed and now are working in South Dakota, Colorado and Wyoming. In Montana, where the Department of Fish, Wildlife and Parks has thoroughly surveyed and mapped likely ferret habitat, a $5,000 reward for a verified sighting has been offered by the New York Zoological Society. The society has extended its offer to the other states now being surveyed.

But it's an iffy enterprise. "With every passing year, the chances of finding more ferrets are less because of the prevalence of sylvatic plague and distemper in prairie dogs," said Max Shroeder, FWS ferret coordinator in Fort Collins. In July and August WGF conducted its yearly spotlight search in the Meeteetse area where the species was rediscovered in 1981 after being thought extinct, but at last report there had been no sightings. The most recent ferret capture near Meeteetse occurred last March.

—Elinor L. Horwitz

GUEST OPINION

WHAT PRICE ARCTIC OIL?

by Bryan Sage

WHEN THE FURORE over oil exploitation at Prudhoe Bay and proposals for construction of the Trans-Alaska Pipeline burst upon the world in the late 1960s, probably few people realized that this was just the thin end of what would turn out to be a very large and ugly wedge; Prudhoe Bay was only the beginning. By 1980 the oil industry had drilled 128 wells west of Prudhoe Bay in the National Petroleum Reserve but failed to find oil in commercial quantities. Other producing fields have been established in the general vicinity of Prudhoe Bay, and now the industry wants to move eastward into the Arctic National Wildlife Refuge and defile the most outstandingly beautiful arctic area remaining in the United States. By the time the industry has finished with northern Alaska, its activities will have affected some 60 percent of the Arctic Slope.

The oil industry considers no place in the world sacrosanct, whether a wildlife refuge or the traditional home of simple Indians in the forests of Ecuador. When the Arctic has been sucked dry of oil, the industry will turn its attentions elsewhere, and already it is casting covetous eyes on the Antarctic. An environmental official of the British Petroleum Company in London who has never set foot in the Antarctic, in an article in a company publication, states: "The possibility that the Antarctic may be opened up to development has brought the sensitivity of the polar ecosystem into focus, and concern is being expressed over the potential consequences for the environment." We are then told that whilst the region has been less affected by man than any other part of the world, "This relatively unspoiled situation would present major challenges to those involved with development, and an opportunity to show what good environmental protection management can achieve."

Here is encapsulated the attitude of the oil industry toward a pristine environment—the same attitude adopted when the industry first entered northern Alaska; the same attitude that it is now adopting in relation to the Arctic National Wildlife Refuge (ANWR). There is not even a faint hint that perhaps the Antarctic should become a world park for the common heritage of mankind. Likewise, there is no indication whatsoever that the industry recognizes any values other than the purely commercial in ANWR. Even though some individuals within the industry may be aware of the wildlife and esthetic values of the refuge, they seem to suffer from a curious form of schizophrenia which leads them to state that adherence to "environmental protection guidelines" and "good housekeeping practices" will take care of the situation. What this attitude actually reveals is a colossal ignorance of the nature of true wilderness, which is best protected by leaving it alone. Wilderness, so far as the oil industry is concerned, is simply something to be conquered and manipulated.

What, then, is so special about ANWR? ANWR is indeed a pearl of inestimable value in the chain of refuges in the United States. Within its boundaries are assembled in unsurpassed harmony a range of arctic ecosystems encompassing great sweeps of tundra, mountain peaks and valleys of breathtaking beauty, glaciers, rivers of crystal clear waters, sparkling tundra ponds and air of remarkable clarity. Within this rich setting is a variety of wildlife that epitomizes the spirit of the Arctic. The one complements the other—the land is the stage, and the animals are the cast which changes with the seasons.

Even though the number of people able to visit this remote wilderness will be relatively small, the average American citizen should feel pleased and proud that it is there and could remain there in perpetuity for future citizens for whom true wilderness will be an even scarcer resource than is the case now. Even those among us who have enjoyed the great privilege of hiking in ANWR find difficulty in adequately expressing the feelings it engenders, the sheer tranquility it brings to the soul, the ever-changing pageantry of awesome beauty and wild weather, the excitement (and fear) at the sight of a grizzly breasting a rise 100 feet away. Many scenes continue to pass through the mind long after the event: crawling out of a tent into the snow and seeing the first caribou of spring; the sight of 50,000 of these animals on the move; a summer evening near Schrader Lake when, instead of darkness, there was a kaleidoscope of subtle colors around the mountain peaks—rich gold, soft yellow, amber, rose and pale violet.

These are the true values and the real spirit of ANWR, and once lost they can never be regained. They are not values that can be expressed in dollars, for their value is spiritual, not financial, and neither the government nor the oil industry has any moral right to destroy such a heritage in the name of short-term gain.

The oil industry claims that Prudhoe Bay is proof that large-scale industrial development can take place in the Arctic without undue damage to the environment or adverse effects on the wildlife, and the average bemused tourist to the area believes this when he sees a few caribou wandering forlornly among the industrial impedimenta. So what is the reality of Prudhoe Bay? It is true that by industrial standards it is a high-quality development. Nevertheless, it has destroyed the wilderness atmosphere over a large area. There are the

See SAGE, page 38

PUBLIC LANDS, PRIVATE DEALS

by Michael Frome

PUBLIC LANDS comprise the most priceless possessions we Americans share as a people. No other country is so enriched by its parks, forests, wildlife refuges and other reserves, administered variously by towns, cities, counties, states and the federal government. Land is wealth, and we the people ought to hold onto every acre of it in the common interest. Public lands provide roving room, a sense of freedom and release from urbanized high-tech super-civilization. Without public lands there would be no place of substance left for wildlife, which has shared our heritage since time immemorial.

Yet no administration in my lifetime, and quite possibly none in the long history of the Republic, has manifested greater antipathy toward the principle of public land than the administration presently in power in Washington. Ronald Reagan came to Washington as a self-proclaimed Sagebrush Rebel, surrounding himself with a band of anti-federal zealots like James G. Watt, determined to dismember and "privatize" the federal estate. Despite repeated rebuffs from Congress and the people, they have never quit trying.

Watt in body is long gone from the Washington scene, but his spirit still prevails at the Department of the Interior as though he had never left at all. This is clearly evident in a long sequence of actions, the latest being a proposed exchange of private land in Florida for public land in Nevada, though "disposal" strikes me as the more appropriate word for it.

"What we've tried to do is get extremely aggressive on the land exchange front as alternative ways of acquiring lands without tapping into the Treasury," Assistant Secretary of the Interior William P. Horn would have us believe while echoing the voice of James Watt. "We will transfer about 45,000 acres of desert in Nevada, north of Las Vegas, to the Aerojet Corporation. They will give us approximately 5,000 acres in Dade County that we don't want, but the South Florida Water Management District does want it and is willing to buy it from us. We would sell all the Dade County land for a couple of million dollars and then use that money to make acquisitions for the Key Deer and Lower Suwannee Refuges, both of which are high priority for endangered species."

That is sugarcoated mumbo jumbo. If the administration were truly concerned about wildlife, it would have examined closely the values implicit in the Nevada land marked for trade. The so-called exchange is wholly designed for the benefit of Aerojet General. Presumably that company would use the Nevada land as the site of a rocket engine manufacturing and testing plant—a good deal for Aerojet, which has been barred from pumping any more hazardous waste underground at its California plant. But it also picks up potentially high-value real estate only 60 miles from Las Vegas.

The acreage in question, in Coyote Springs Valley, is administered by Interior's Bureau of Land Management (BLM). It sustains resident desert tortoises, a vulnerable species on Nevada's protected list and a candidate for federal threatened or endangered listing. Nearby springs support four desert fish species listed by the Interior Department as endangered. Aerojet proposes to extract more than 2 million gallons *daily* from the underground aquifer, undoubtedly lowering the water table, with serious implications for the springs vital to both the endangered fish and other wildlife.

Interior's disregard for professional studies made by its own field biologists may well be the sorriest part of this story. As they are required to do by Section 7 of the Endangered Species Act, U.S. Fish and Wildlife Service biologists looked into the Aerojet plans. They determined that these would affect the endangered species adversely. Therefore they rendered what is called a "jeopardy opinion." Unless steps can be taken or alternatives found to eliminate the jeopardy, such an opinion can block a project. However, higher officials evidently decided to get around this embarrassment by ignoring everything but the mere land trade. By this sleight of hand, the original biologists' finding was replaced with a "no jeopardy" opinion. As the Wilderness Society's James D. Webb, criticizing this maneuver in recent testimony before a House subcommittee, put it: "It is absurd for an agency of the United States government to limit field professionals to an analysis of the impacts of a business transaction without regard to the proposed future use of the property once the trade is made."

Interior officials have been equally casual toward requirements of the National Environmental Policy Act. The sole environmental assessment to date has been an analysis prepared by a private consultant under contract to Aerojet. Critics also believe the land Aerojet wants has been grossly undervalued.

Charles S. Watson, Jr., director of the Nevada Outdoor Recreation Association and a long-time defender of the public lands, deserves credit for bringing Interior's shoddy handling of this proposed deal to light. Thanks largely to his efforts, the land trade has not yet been consummated. It requires approval by Congress, and I hope Congress says, "Nothing doing!"

The time has come, if you ask me, to stop dealing off public lands and to start protecting them in earnest. Public lands administered by BLM are extensive in the western states. They have been dominated and abused by the cattle and sheep industries, the old entrenched power structure of the western range, plus mining, log-

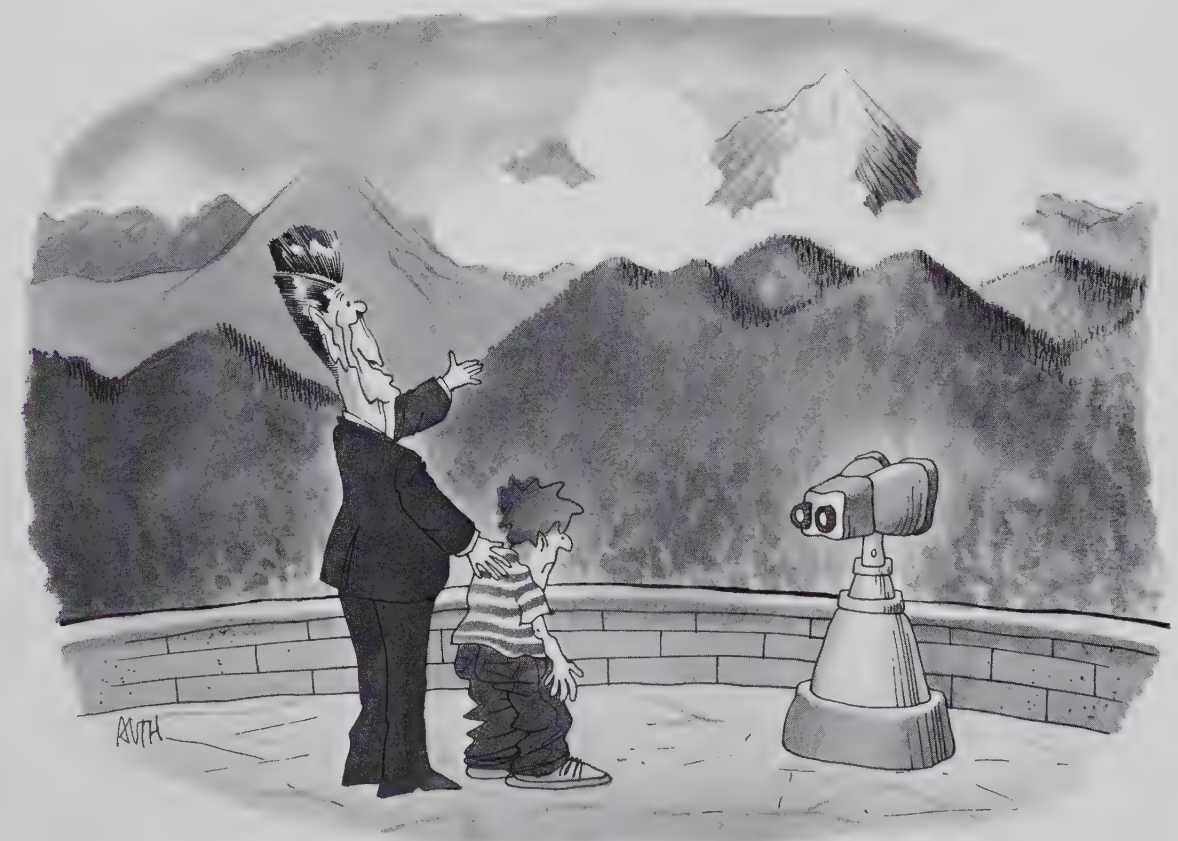
ging, oil and gas and real estate interests, the Sagebrush Rebels incarnate. As a result, millions of acres are in poor condition, eroded and unproductive, a disgrace to the nation. The commodity production interests, with the help of friends in Congress, have blocked protection and progressive management at every turn while all values—soil, water, wildlife and forage, too—have suffered. But BLM lands constitute the largest undeveloped potential for wildlife and outdoor recreation in America. They provide habitat for antelope, elk, deer, upland birds and waterfowl, as well as rare species like the desert tortoise, banded Gila monster, desert bighorn sheep and endemic species of fish. BLM lands are *national* lands, crying for interest and support, not only in the West but everywhere.

Public land has been used by the federal government in exchanges for a long time. The process has been designed, in principle, to acquire key tracts, privately held, within the boundaries of national parks, national forests, reclamation project areas and even, on rare occasions, BLM special management units such as the Rio Grande Wild River in New Mexico. Lands must be of equal value (or include payment to compensate for the difference); but exchange has been a slick profit-making device for land speculators, since values change once roads and utilities are installed by a growth community.

Such is the history of BLM and its predecessor agency, the General Land Office. Laws like the 1862 Homestead Act directed that everything possible be done to help a poor citizen obtain his quota of the public domain. In fact, however, the early laws were subverted, leading to fraud, speculation and concentration of wealth. The establishment of national parks and national forests saved some of our heritage before it was too late, while the unclaimed, unwanted "leftover lands" were to be administered by BLM and to be considered the logical source of trading stock.

We should now know better. The Federal Land Policy and Management Act of 1976 directs that the millions of acres administered by BLM be managed and protected in the public interest. Their qualities have been identified not only as commodities but as desirable resources of recreation, wildlife, wilderness and cultural history—much too valuable to give away. I don't oppose the principle of land exchange. It can be applied for public benefit, but every exchange proposal should be scrutinized carefully—and openly.

Let us protect and preserve our landed estate boldly, honoring the brave professionals in government who stand up for principles of integrity, and tossing out the rest.□



Drawn for DEFENDERS by Tony Auth

CONFRONTATION IN THE NORTH

Embattled conservationists are fighting to protect a crucial coastal area in America's second-biggest wildlife refuge

by Tom Kizzia

It was the fourth of July, and Fran Mauer was watching a huge aggregation of more than 60,000 caribou massing on the Beaufort Sea coast in northeastern Alaska for a long trek through the mountains. The calving season of the Porcupine caribou herd, some 200,000 strong, had come to an end, and the migration to winter range was starting, a spectacle that repeats itself every year. Mauer calls it summer's grand finale on the arctic coastal plain.

"It's the closest thing to Africa that Alaska has," he remarked a week later as we flew high above the gravel bars and wet tundra at the continent's northern edge. "From the air, they looked like a brown amoeba, they were so tightly massed. The mosquitoes were driving them crazy." Mauer is a U.S. Fish and Wildlife Service biologist based each summer in the tiny Inupiat Eskimo village of Kaktovik on Barter Island. We were flying over the coastal plain to see whether the restless caribou had moved out. I had been invited along to see the country.

The morning was sunny, and away from the refrigerated breeze off the ice pack it was also hot. Through the right window of our single-engine plane we could see the crags and small glaciers of the Brooks Range. Braided rivers poured out of valleys. The arctic Serengeti below was proving less expansive than I'd imagined. The rolling tundra prairie reached barely 30 miles to the edge of the Beaufort Sea on our left. Beyond an open lead of blue water along the shore, the pack ice ran eye-rinsing white to the horizon. "It's really a concentration of habitat," Mauer was saying. "There's probably nowhere else in the Arctic you can have Dall sheep looking down on denning polar bears."

The arctic wilderness sometimes is depicted as an empty wasteland. In the harsh winter, the expanse we were gazing on becomes snow-blown and forbidding, true enough. But even then, there is a surprising variety of life holding out against the cold, such as snow-white arctic foxes, female polar bears in their maternity dens, wolverines, hulking muskoxen and hardy ptarmigans, gyrfalcons and snowy owls. Then, with the sudden arrival of spring and the brief arctic summer, there is a wonderful explosion of life beneath the 24-hour sun. Tundra flowers bloom. Insects swarm. Ducks and other birds wing in from several continents to nest around the many ponds. Grizzlies and wolves descend from the mountains. And the great binational Porcupine caribou herd, named for a Yukon River tributary that crosses its long migration route to and from Canadian wintering grounds, comes to the Beaufort Sea coastal plain to graze on the rich tundra vegetation and bear its young.

The 19-million-acre Arctic National Wildlife Refuge (ANWR) is one of North America's very special wild places—remote, vast (nearly as large as Maine), still virtually untouched by man. No road comes close. No signs mark trails across this far corner of Alaska. No designated campsites make things easy for the kayaker or backpacker. The Fish and Wildlife Service (FWS) provides no trail maps, responding to requests with a polite form letter pointing out that perhaps more than any other place in America, ANWR "is a place where the sense of the unknown, of horizons unexplored, of nameless valleys remains alive." Rivers run their entire courses down the Brooks Range's north slope to the sea without passing a single sign of mankind. Almost half the refuge has special statutory protection as congressionally designated wilderness. The terrain that Mauer and I were inspecting is the only part of Alaska's long northern coast protected by law for the sake of its wildlife.

In 1968, however, oil was struck at the edge of Prudhoe Bay, 50 miles west of the Canning River, ANWR's western boundary. Prudhoe Bay is now the site of the nation's largest producing oil field, accounting for 20

Porcupine herd caribou, mostly cows and month-old calves, graze in the 1002 Area on the Arctic National Wildlife Refuge's coastal plain.

In the Brooks Range, a band of Dall sheep makes its way along a trail above the Hulahula River. Many sheep trails thread through the mountains overlooking the ANWR coastal plain. A polar bear feeds on part of an Eskimo-killed bowhead whale left on a beach not far from Kaktovik.

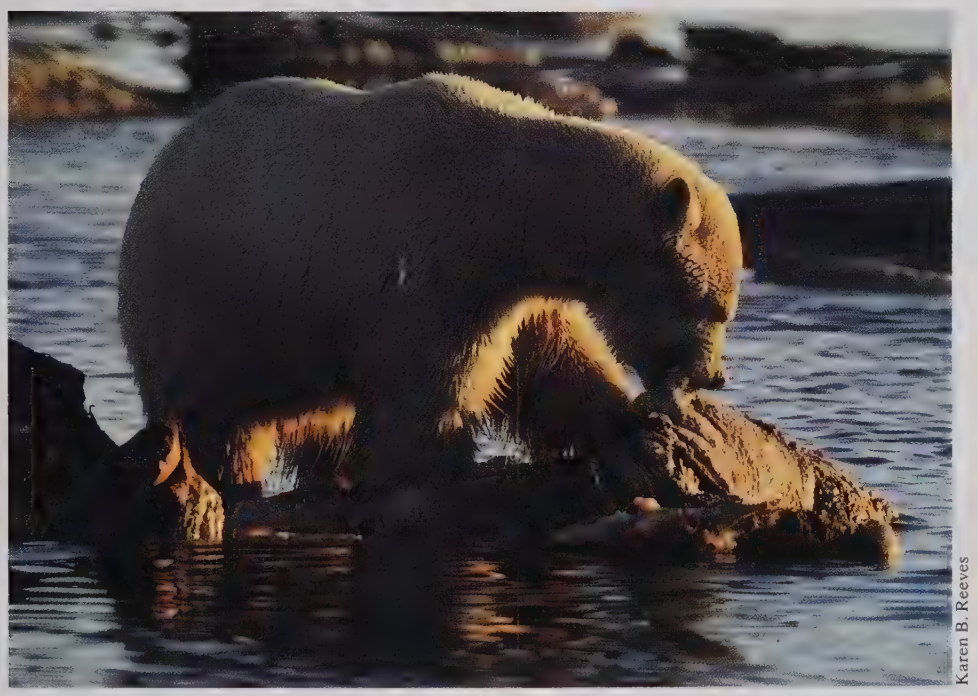
percent of our annual domestic oil production. But since half its recoverable oil has been pumped out (there is more close by, however; the West Sak field on the Kuparuk River, alone, is estimated to contain some 20 billion barrels), oil companies naturally want to find more for the Trans-Alaska Pipeline to carry south a few years hence. And they are eagerly eyeing the ANWR coastal plain, where according to a recent Department of the Interior report there is an estimated 19 percent chance of a "producible" oil discovery and a slight chance of finding nearly as much as at Prudhoe Bay. The oil industry, with the enthusiastic backing of the Reagan administration, wants to explore and, if enough crude is found, move in with all necessary workers and equipment. In effect, it hopes to extend the sprawling Prudhoe Bay oil field 150 miles eastward and three-fourths of the way across the refuge.

In 1980, when Congress after much argument enacted the Alaska National Interest Lands Conservation Act creating or expanding a number of national parks, preserves, wildlife refuges and wilderness areas in our little-developed 49th state, it included the eastern fourth of the ANWR coastal plain in the 8 million acres of the refuge designated as protected wilderness. But it left undecided proposed wilderness designation for the rest of the plain. In Section 1002 the Interior Department was directed to

investigate both the wildlife values and petroleum potential of this 1.5-million-acre coastal area, now known familiarly as the Section 1002 Study Area. A bulky report recently was submitted to Congress, and congressional committees have begun to hold hearings. The future of the 1002 Area now is shaping up as the biggest national conservation issue since the Alaska Lands Act itself.

Secretary of the Interior Donald Hodel has recommended leasing the entire 1002 Area, citing what he calls a "vital need for domestic sources of oil and gas" and contending that the area is the nation's most outstanding onshore "petroleum exploration target." Prudhoe Bay oil producers claim to have learned how to explore, drill, build gravel roads and airstrips and install and operate pipeline networks in the fragile Arctic without detriment to wildlife. They distribute publicity photos of caribou grazing contentedly beside the Trans-Alaska Pipeline and its pumping stations. But FWS and Alaska Department of Fish and Game wildlife biologists who have studied the entire region point out that conditions in the 1002 Area are quite different from those at Prudhoe Bay. They believe oil facilities and operations in the 1002 Area not only could disrupt calving and other vital caribou activities, perhaps causing the Porcupine herd's numbers to decline, but also could adversely affect much other wildlife. And of course, much of the unsullied, refreshingly wild upper end of America's second-largest wildlife refuge would be defaced forever.

Already, thanks to intrusions permitted by Congress as part of the studies ordered in 1980, the hand of man has made its imprint in places where as recently as three years ago the wilderness was still unblemished. I had been gazing down at the ponds and at the curious polygons on the tundra. Occasionally a pond was accented by the white forms of nesting pairs of tundra swans, which with their offspring migrate all the way to Chesapeake Bay and the Carolinas for the winter. Now I saw parallel lines across some of the polygons—striped tracks on the tundra left by seismic crews. Seismic crews explore underground rock structures by setting off small explosive charges, then "listening" for varying echoes that, when interpreted, provide evidence of oil-bearing potential. The crews had done most of their work in winter to avoid disturbing lingering caribou and other wildlife and to cushion their vehicles' tread with the snow. The tracks across the delicate lichens and tussocks were nevertheless visible, their imprint sharpened by the thawing and freezing of the soil on top of the permafrost that underlies the surface in the Arctic. Federal botanists say most of the affected vegetation is beginning to recover except in deep cuts on slopes. But the deep cuts are eroding and getting worse.



Karen B. Reeves

Mauer said trails and trash, whether from military construction, Native hunting camps or oil-exploration activities, are beginning to show. "Theoretically, management agencies can keep the trash picked up," he added. "But as a practical matter, with conditions up here that's impossible. Everybody's intentions are good, but the pristine nature of the refuge is changing."

"Tick tick tick." Mauer looked up. The sound was coming from one of 140 caribou radio collars in the huge Porcupine herd. The pilot turned up the Kongakut River, which the caribou cross in a long procession before they reach the Yukon border, and circled several bare mountain ridges, drawing a bead. We dropped over the ridge and there were the caribou, the first of three aggregations we would spot that day. These were only tail-end fragments of the main herd. Still, they were an impressive sight. Several thousand animals had climbed improbably high up a steep mountain slope to escape insects. We didn't want to fly too low and stampede them. From the air, they looked like blond mosquitoes on a camper's back.

The mountainside was terraced with trails, dozens of parallel lines etched more deeply than any left by seismic exploration vehicles. But these trails belong there. The caribou follow them faithfully year after year. "It can be awesome to be on the ground and find all those deep-rutted trails. Some of them are cut as much as two feet deep," Mauer remarked. "One person referred to the caribou as a geologic force."

Later, back at the gravel airstrip at Kaktovik, Mauer mentioned another change oil development would bring. A supply road would connect the refuge with the pipeline haul road at Prudhoe Bay and thus with the rest of America. That would bring hunters,

Overleaf: Above the Niguanak River, FWS's Fran Mauer recorded the July 4, 1986, movement of 60,000 post-calving caribou from foothills to sea.

he predicted. When the haul road was built from Fairbanks, the first modern ground link to the far Alaskan north, the legislature tried banning hunting along it to protect caribou and other big animals. But illegal hunting has grown rapidly and remains virtually unpoliced. So Mauer in effect is holding his breath and waiting, hoping that if the oil companies are allowed to drill they will find nothing.

Actually, no one reliably can predict the chances of finding enough oil to justify the extreme cost of development on this arctic frontier, where industry must overcome not only remoteness but also winter's darkness and bone-chilling subzero temperatures. In 1985-86, one exploratory well was drilled on Kaktovik-owned land on the mainland, but the company, Chevron, is keeping the results secret. The Interior Department's estimate of a 19 percent chance of finding an "economically recoverable" oil field somewhere in the 1002 Area is based on oil selling at $33 a barrel, and oil was selling for only half that when the department's final 1002 report was released in April. Without a big price increase, the coastal plain becomes even less economically attractive. If the industry hits on that one-in-five chance, Interior says there is a five percent chance of finding 9.2 billion barrels' worth (Prudhoe Bay's recoverable reserves were estimated at 9.6 billion barrels at the time production started) and a 95 percent chance of finding 600 million barrels. The mean estimate of recoverable oil in the 1002 Area is 3.2 billion barrels.

Even the interpretation of numbers has become a matter of controversy. William P. Horn, Assistant Secretary of the Interior for Fish and Wildlife and Parks, has asserted: "The numbers say there is a good prospect here of another Prudhoe Bay." But conservationists have pointed out that the mean estimate would meet the nation's oil needs for barely 200 days and also have accused Interior of putting an overly favorable gloss on the estimates. "They released the numbers to get Congress talking about a new Prudhoe Bay," says Tim Mahoney, a Sierra Club lobbyist who chairs the conservationist Alaska Coalition. "When you calculate it out, there's really only a one percent chance of finding another Prudhoe Bay."

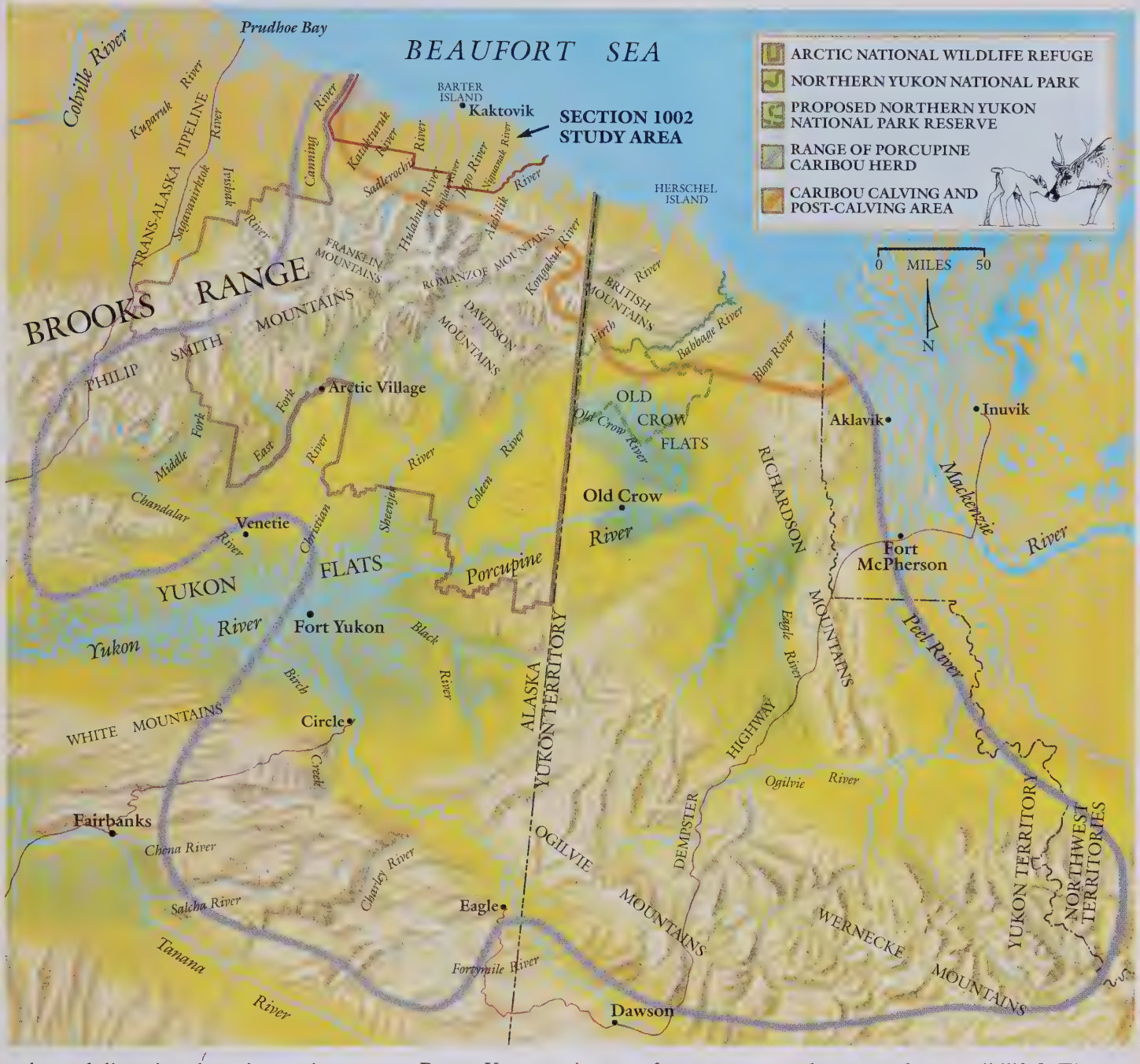
Flying into the big public airport at Deadhorse serving the Prudhoe Bay oil field, a visitor sees what the 1002 Area might become. A network of gravel roads, raised high above the wet sedges, sprawls all the way to the flat horizon. The roads connect drilling platforms, pumping stations, gas reinjection units and modular housing complexes with three satellite oil fields, Kuparuk, Milne Point and Lisburne. Each facility has its own gravel pad, in some cases covering as much as 100 acres. Feeder pipelines link the gravel islands. Natural gas flames brightly atop several stacks, sending occasional puffs of black smoke into the sky. As many as 6,000 workers have been based here at a time, living and working in buildings shipped whole on barges from Seattle, as cut off from the natural world surrounding them as if they were in a space station.

The audacity and scale of this frontier effort have helped make both the oil field and the Trans-Alaska Pipeline tourist attractions. Package tour operators offer special flights and day trips to Prudhoe Bay. At a roadside stop near the oil port of Valdez 800 miles to the south, tourists can pull a plate off the pipeline's outer insulation and feel the warmth of the oil in the inner pipe. Like a religious icon, the spot has been worn by their fingers.

The oil industry regularly cites Prudhoe Bay as an environmental success story. But the operation has not been as squeaky-clean as claimed. The Natural Resources Defense Council, a conservation group that has investigated the subject, has likened the amount of air and water pollution at Prudhoe Bay to that of a major city. The Environmental Protection Agency has expressed concern about air pollution caused by North Slope emissions. Most oil spills have been small, but they have occurred repeatedly. Since Prudhoe Bay began pumping, Alaska's Department of Environmental Conservation has recorded thousands of spills at the field. State pollution regulators have criticized drilling procedures, hazardous-waste disposal practices and air pollution from "black smoke incidents" caused by start-up and emergency gas-flaring. State inspectors have found potentially toxic drilling fluids seeping from disposal pits into wetlands.

To be sure, no major disaster has been reported, but no studies of long-range toxicity resulting from waste seepage have yet been made, and state-approved monitoring of air pollution has only just begun. Federal officials say the oil industry is patting itself too vigorously on the back for efforts to restore disturbed areas and mitigate environmental impacts. "As the Corps of Engineers noted in its comments on the draft [1002 report], industry has been reluctant to apply compensatory mitigation and restoration techniques on the North Slope, except in very limited experimental circumstances," EPA's northwest regional director wrote last June. "EPA's own extensive experience with the major operators at Prudhoe Bay supports this conclusion; rehabilitation technology for the North Slope is particularly lacking."

What if Congress does open the 1002 Area to oil leasing and the industry makes a lucky find? Interior's 1002 report leaves no room for doubt about the change in the landscape that would ensue. According to department projections, full-scale leasing and development would require a 150-mile-long elevated pipeline running east and west, connecting in turn to numerous feeder pipelines. A parallelling haul road would link with 160 miles of spur roads fanning out to different parts of the oil field. Two ports would puncture the coast so that barges could deliver modular buildings during the ice-free summer. As at Prudhoe Bay, the coastal plain would be packed with 11 production plants, 50 to 60 drilling pads and living quarters for up to several thousand workers. For fresh water, the oil companies would have to build reser-



Bob Pratt

voirs and diversion dams in creeks or import modular desalination plants. To build the roads and four permanent airfields, gravel would have to be stripmined from borrow pits, possibly in river beds.

Advocates claim all this would not be very disruptive. "If oil is found," Secretary Hodel has stated, "the maximum area directly affected by production would be around 13,000 acres—a fraction of one percent of the entire coastal plain."

Alaska Coalition Chairman Mahoney disagrees. "That's like saying if I build an interstate highway through a residential neighborhood, it doesn't take up very much acreage. The actual impacts would be phenomenal," Mahoney says.

Roger Kaye, assistant refuge manager, comments similarly. "It's so flat here, visibility is so great and noise travels so far, the impact would be much greater than other places, extending far into the mountains," he asserts. And if one digs deeply enough in Interior's thick report to Congress, one finds a straightforward admission that full-scale oil development would destroy the entire 1.5-million-acre 1002 Area's present wilderness character. "The wilderness value of the coastal plain of the Arctic Refuge would be eliminated, except for the area of the refuge east of the 1002 boundary between the Aichilik River and the Canadian border which is designated wilderness," the report states.

What would the coming of oil development do to wildlife? The answer must begin with appreciation of the special circumstances and surprising richness of life on this stretch of the arctic coast. Here, for example, polar bears den on land although elsewhere Alaskan Beaufort Sea polar bears den on the pack ice. Female polar bears give birth in the dens, usually in February, and at this point are very sensitive to human disturbance. It happens that the places in the 1002 Area earmarked by the Interior Department for potential oil ports are also known denning areas.

Early in 1985 a tracked-vehicle train carrying oil-drilling equipment passed about a quarter of a mile from the den of a pregnant radio-collared polar bear. The bear abandoned the

den and headed out onto the pack ice. She bore no cubs. "It's very likely that the disturbance had some impact, but it would be jumping to conclusions to say so, because we've had other bears not subject to human activity also abandon their dens without cubs," cautions FWS biologist Steve Amstrup. But he adds: "The tragedy was that the service knew where the den was and supposedly knew the route the Cat train would take, but communication broke down and nobody was there to monitor the situation." Would monitoring be more efficient, or more effective, in the context of full-scale exploration and oil-production operations?

Muskoxen, huge, shaggy animals unique to the Arctic, remain on the plain all year. Construction of roads and drilling pads, especially in river drainages, could have serious impacts on them. In summer and fall the muskoxen graze on the dwarf willows and abundant forbs in these drainages. Interior's 1002 report notes that nearly three-fourths of the favorite muskoxen calving area may be in the path of potential oil activity. "Major negative effects" could occur if the presence of oil-bearing strata or scarce gravel attracts industry into those valleys, according to FWS biologists. Their report adds that the muskoxen population would also be reduced if hunters were not policed closely.

Muskoxen are highly vulnerable. They were extirpated from Alaska in the 19th century when their habit of defensive clustering proved less effective against men armed with rifles than it had against wolves. Sixty-four of the picturesque, bison-like animals were reintroduced on the ANWR coastal plain, 51 in 1969 and the rest in 1970. Two years ago their numbers had reached some 476. Would oil operations undercut this success?

The effects of oil development also could extend offshore to bearded and ringed seals, beluga whales and endangered bowhead whales. The worst potential marine impact, according to the Interior report, would be disruption of whale migration patterns by summer supply ship traffic and by dredging and port construction. Onshore development also would make it more economical to undertake offshore oil drilling in this part of the Beaufort Sea, a prospect with its own set of wildlife hazards.

Beaufort Sea coastal waters support 62 species of fish, and the refuge's coastal rivers have arctic char and grayling populations as well as some other hardy species. Interior's 1002 report concedes that a big oil spill could have major consequences for species ranging into Canadian coastal waters and that docks, causeways and other facilities could impede fish movements. The report also cites the possibility of changes in water chemistry and of fish kills at water intake structures. But it calls the probability of a major spill "low" and says other adverse effects could be minimized by proper planning.

One of the hottest points of debate over the oil development proposal, however, relates to the need for gravel and fresh water, both of which involve the area's rivers. Interior says gravel removal and other stream alterations in important fish habitats "should be" restricted. But critics say the department's 1002 report offers only vague assurances. "They're really talking about stripmining on river banks, digging reservoirs and damming rivers," Mahoney says.

Biologists have identified 135 bird species in the 1002 Area. Half a dozen species of ducks, especially oldsquaws, breed in the area, as do four species of geese, three of loons, two kinds of gulls, arctic terns and black guillemots. The area supports approximately 100 pairs of nesting tundra swans (also known as whistling swans). Eighteen species of shorebirds also breed in the area. From mid-June to mid-July more than 2 million are estimated to be present. Many ducks and geese that breed elsewhere use the area's lagoons and nearshore waters for staging areas during fall migration. Nearly a million king eider ducks from the Aleutians move past in late May toward Canadian breeding grounds, and similar throngs move back again in June, along with half a million migrating oldsquaws. Lapland longspurs are the most abundant of the perching-bird species. Among the raptors are short-eared owls, golden eagles, rough-legged hawks and threatened arctic peregrines.

One of the coastal plain's spectacles is the arrival of the lesser snow geese. They come in late summer after nesting on Banks Island in Canada's Northwest Territories (a few also come from Siberia's Wrangel Island). The geese feed in ANWR wetlands for as long as 20 hours

Joel Rogers Alaska PhotoBank

Flaring crude oil and gas produce a dense smoke cloud at a Prudhoe Bay flow station in 1977. Some Prudhoe smoke plumes have extended for 50 miles.

daily, putting on fat for their fall migration to California's Central Valley, Colorado, New Mexico and Mexico. Each year more than 100,000 use the coastal plain as a staging area. In some years the number exceeds 300,000. "No matter where you fly, you see them," says Assistant Manager Kaye. "From the air you see a kind of gray area on the tundra, and as you fly closer it just explodes in white wings."

Bryan Sage

Feeder pipelines stretch toward a gathering station in the Prudhoe Bay oil field. Similar facilities would be required for oil development in ANWR.

Chronic and unavoidable oil spills and disposal of hazardous drilling mud would certainly affect this rich birdlife, according to the 1002 report. A serious oil spill in a single lagoon during peak molting or staging periods would be a major disaster. Some birds would be killed by vehicles, powerline collisions and poaching. The snow geese, known for sensitivity to noise, probably would suffer the biggest impact, according to the 1002 report. Females in particular, recovering from the stress of reproduction, need time to feed if they are to have the energy to complete their migration. The combination of direct habitat loss and truck and air traffic noise could cut down on the amount of food intake or force the geese into other, less favorable feeding areas. Such displacement and possible resulting losses could mean that the United States was failing to live up to its obligations under several international migratory bird treaties.

While I was in Kaktovik, two biologists returned from a field camp and told excitedly of a wilderness tableau they had witnessed: two wolves defending their mountain den against a grizzly while 10,000 caribou passed through the valley below as they left the plain. The story left all who heard it with an image of marvelous interweaving of animals and habitats. "It's hard to look at the coastal plain as a separate entity," says David Klein, veteran wildlife researcher at the University of Alaska. "It's part of a much larger system, and of course the caribou demonstrate that very effectively. We can't really separate, in the ecology of the caribou, the coastal plain from the wintering area, or the wintering area from the coastal plain. They need them both, and they need the migration routes between the two areas. We're dealing with overlapping ecosystems, and the flow of energy and animals between ecosystems."

The Porcupine herd provides a striking illustration of this interconnectedness. Caribou come to the coastal plain at calving time, biologists believe, both to escape predators and to find highly nutritious forage on the slopes where the snow first melts. Pregnant caribou cows precede the rest of the herd and move up onto the bare northern foothills. At this season wolves and grizzlies tend to lag behind in the mountains with their own young. In an almost miraculous feat of timing, the entire herd drops its calves within a few days at about the end of May, apparently an ecological adaptation designed to reduce predation by glutting the supply of spindle-legged newborns. Into July the coastal plain remains a focal place for the caribou. As the mosquito clouds emerge from the tundra and grow dense, caribou often move out onto the barrier islands and river deltas to seek relief from the pests. By mid-July the great aggregations have formed and begun to move east into Canada and south through mountain passes.

Oil companies claim they have proved at Prudhoe Bay that oil development and caribou can be compatible. Recalling dire warnings by conservationists before construction of the Trans-Alaska Pipeline, they point out that the size of the small Central Arctic caribou herd around Prudhoe Bay has more that tripled. But this may well be misleading. Biologists of the Alaska Department of Fish and Game (ADF&G) contend that Prudhoe Bay never was an important calving area. Most caribou photographed in and around the oil field have been bulls that keep to themselves in summer and sometimes head for graveled areas such as elevated roads at the newer Kuparuk oil field, just to the west, to escape mosquitoes, warble flies and nose bots. An adverse impact on calving has been documented at Kuparuk, state biologists report. Cows apparently avoid developed areas where they used to roam and seek to keep a two-mile buffer zone between themselves and busy roads.

Why has the Central Arctic herd increased despite this disruption? One reason is that since the oil invasion, wolves and grizzly bears have been shot or have shied away from the area. There also has been plenty of alternative calving territory for the

Douglas H. Chadwick

Doug Plummer

Alan Brackney/U.S. Fish and Wildlife Service

herd. The Central Arctic herd is small —only 15,000 animals, compared to the 200,000 of the Porcupine herd— and at Prudhoe Bay the coastal plain reaches some 100 miles inland, far deeper than in ANWR, where the plain is hemmed in by the Brooks Range.

"We feel there has been some displacement from calving grounds and disruption of movements at Kuparuk," says ADF&G biologist Ken Whitten. "In spite of that, the Central Arctic herd has been able to fare well because even with the population growth, it is at a relatively low density compared to the area it uses. The Porcupine herd, on the other hand, has 14 and 15 times as many caribou per square mile on the summer calving grounds."

The Porcupine herd, in other words, probably can't move aside so easily to make way for drilling rigs and pipelines. Oil development in the 1002 Area might also obstruct caribou movements in the sensitive post-calving period when insect harassment becomes intense and caribou need to fatten up for their migration. Empty gravel roads have not proved serious obstacles to caribou movement at Prudhoe Bay, according to a 1986 ADF&G report reviewing studies there. But elevated pipelines at Prudhoe Bay have been reported to cause caribou detours. The combination of pipeline and road, especially with heavy truck traffic, has been a serious deterrent even for small numbers of caribou.

"With the Central Arctic herd, you've got 500 to 1,000 caribou crossing a road. The problem with the Porcupine herd is that you've got post-calving aggregations of tens of thousands of caribou, and nobody knows if they will behave the same way," says state habitat biologist Dick Shideler. "In those big groups they tend to act differently, like a single superorganism. They've been known to stampede when spooked at river crossings. Heavy traffic on a road is the worst possible combination. We don't want to pen them in. The key to caribou survival strategy is to be able to move in different areas, depending on changes in vegetation, insects and predation. They have to be flexible to survive."

Environmentalists have accused the Reagan administration of downplaying the possibility of harm to the Porcupine herd ever since James Watt, as Secretary of the Interior, tried to assign lead responsibility for the wildlife impact study to the U.S. Geological

Near the Jago River in the 1002 Area, a spectacular flock of some 6,000 lesser snow geese interrupts its feeding on cottongrass, reacting to a census aircraft. Note seismic-vehicle tracks marring the tundra at top. The 1002 Area's rich summer birdlife includes shorebirds like the pectoral sandpiper and semipalmated plover on the lower Hulahula River (far left); a female red-necked phalarope at the Sadlerochit River; young rough-legged hawks above the Katakturuk River; and a brood of Lapland longspur chicks.

U.S. Fish and Wildlife Service

Douglas H. Chadwick

Survey, the agency responsible for assessing the nation's mineral and oil reserves. Conservation groups won a federal court order for lead responsibility to be assigned to FWS. But even with FWS in charge, the 1002 report was edited to downplay the prospective adverse impacts on wildlife. In a draft released last November, Interior predicted "a major population decline and change in distribution of 20-40 percent" of the Porcupine herd. Five months later, when the final report was issued, Secretary Hodel said the statement should have read "a major population decline *or* [emphasis supplied] change in distribution," and he blamed an editing error.

The revised report sent to Congress said a change in distribution could "reasonably" be expected but added flatly that "no appreciable population decline is expected as a result of oil development." The final document simply dropped specific forecasts as to a possible Porcupine herd population decline. It also omitted the draft report's forecasts of a 50 percent displacement of staging snow geese and a 25 to 50 percent displacement or population decline for muskoxen.

Interior also edited the final report to downplay the significance of the calving grounds in the 1002 Area. The draft identified 311,000 acres on the coastal plain in Alaska and Canada as a "core calving area" where dense Porcupine herd calving activity occurs most consistently. Nearly four-fifths of this acreage is in the 1002 Area. After opponents of oil leasing pointed to this finding as significant, Interior dropped the term "core calving area" and turned to discussion of a 2.1-million-acre "concentrated calving area," which includes range used less frequently. Only 37 percent of the "concentrated" calving zone is in the 1002 Area. The implication of the final report was that the Porcupine herd had other places it could go at calving time. The source of the "concentrated calving area" approach was the oil industry.

Although the draft recommended withholding the core calving area from immediate leasing, the final report urged Congress to open up the entire 1002 Area. It also recommended omitting specific environmental protection measures, instead delegating to the Secretary of the Interior "authority to establish requirements for oil and gas operations that allow them to proceed in an economically reasonable manner but avoid unnecessary adverse effects" and "to require lessees to restore the leased tract to protect environmental values to the extent reasonably possible and desirable."

After the final report's release, FWS biologists said they had been ordered not to discuss the changes with reporters. But the silence did not extend to EPA, which publicly criticized the final report for what it called a number of shortcomings. Cited by EPA were the downgrading of impacts on wetlands from "moderate" to "minor" without explanation; failure to evaluate the effects of future additional development made possible by opening the 1002 Area; and ignoring the data on the Porcupine herd provided by Interior's own biologists. The Alaska Coalition has accused the department of covering up the real biological findings. Earlier projections of damage to the caribou herd, the coalition said, had been "wished away." Even Governor Steve Cowper, no opponent of coastal plain development, took a shot at the final report. "That's funny," he commented when told the core area had disappeared, "because the core calving area appears on Interior's maps, which

Part of the Porcupine herd here has sought respite from insect bites by moving onto Beaufort Sea beaches and ice floes—a habit oil operations might disrupt. Below, migrating bulls swim the Porcupine River in Canada.

Joel Bennett/Alaska PhotoBank

Dennis and Debbie Miller

are based on 14 years of study by federal biologists."

"You can sit there and argue about lines on the map until you're blue in the face, but the point is there is an area of recurrent use," says ADF&G's Shideler. "As far as the state is concerned, we consider it a key area. I think they don't want to admit that it exists. The oil companies found some people who would tell them the core calving area doesn't exist, and Interior decided to listen to them rather than look at its own data."

The 1002 Area is clearly both the Porcupine herd s preferred calving ground and its preferred post-calving area, biologists say. In 13 of the last 16 years, the majority of the herd's pregnant cows have given birth there. When snow is slow in melting or late storms occur, not all the cows may arrive in time. Spring has come late for the last two years, and last year about a third of the herd calved in Canada. This year about two-thirds calved there, according to a preliminary estimate. Much of the Canadian calving occurred on protected lands in Yukon Territory. However, in both years the entire herd moved into the 1002 Area in the latter part of June for the usual post-calving recuperation. "There is a real reason why they try to get there," says Shideler. "We're not sure what that reason is. The best picture you can get of this is the findings of a November, 1985, symposium of 13 caribou biologists on the subject of the coastal plain. People had different approaches. Some thought the herd came to the 1002 Area because it had lower predation. Some said it was closer to the mosquito-relief habitat on the coast. But there was unanimous agreement among the biologists that development in that core calving area would mean displacement."

What will happen if the Porcupine herd is forced to use inferior habitat? Shideler and other biologists say calving mortality appears to be higher in years when the herd doesn't reach the customary calving grounds, but whether that is because of inferior habitat or because of the harsh weather holding the herd back in those years is uncertain. More studies are needed, according to researchers.

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A group of the 1002 Area's picturesque muskoxen huddles while grazing along the lower Sadlerochit River. They stay on the plain the year around. An arctic fox carrying a newly caught bird heads for its den and young.

In the meantime, the oil companies shouldn't grow too confident about the future of the Central Arctic herd, according to some biologists. So far, this herd has been able to avoid oil development areas when it needs to. But part of the herd calves in the 1002 Area, and a road and pipeline from Prudhoe Bay also would cross other parts of the herd's prime calving habitat. "The effect on the Central Arctic herd of development in the refuge has been grossly underestimated, " says ADF&G's Ken Whitten. "The state lands between Prudhoe Bay and the refuge are already leased, and they have proven reserves. Opening the refuge would mean development on the state lands, too. You'd end up with large-

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scale development across the entire summer area of the Central Arctic herd."

As potent as the symbol of the caribou may be, the groups fighting to keep oil rigs out of the Arctic Refuge don't want the debate in Congress to become narrowly focused on the survival of the Porcupine herd. "The caribou are a double-edged public relations sword," acknowledges the Alaska Coalition's Mahoney. "On the one hand, the caribou are one of the most spectacular reasons for protecting a spectacular place. On the other hand, man has learned elsewhere to manipulate deer populations. At Prudhoe Bay they've wiped out the wolves, and they can manage the caribou like a zoo. If Congress gets itself into a wildlife management mode, we can't win. We need to keep our focus on the larger question of habitat and on preservation of the pristine wilderness."

Environmental groups, including Defenders of Wildlife, revived the Alaska Coalition that fought the 1970s battle over the landmark Alaska Lands Act. That struggle eventually gave conservationists reason to rejoice. The compromise creating the 1002 study area was a major disappointment, but even there conservationists scored a near-miss. By wide margins, the House voted twice to include the entire ANWR coastal plain in the refuge wilderness unit, though this was blocked in the Senate.

The oil industry learned a lesson, however. Plainly it is no longer underestimating the popular appeal of Alaska conservation. And so far, it seems to have turned the tables. Conservationists are on the defensive. Oil company lobbyists beat them to many offices on Capitol Hill. British-owned Standard Oil, the largest producer at Prudhoe Bay, wrote its subcontractors and supply companies urging them to call on members of Congress to open the refuge "because such an action will be good for our state, our nation and will do nothing to damage the arctic animals and scenery which we all value in Alaska." Highway user groups and recreational vehicle owners have turned out at public hearings to express concern over having adequate gasoline for their engines.

Both last year and this year, House Interior Committee Chairman Morris Udall (D-Arizona) introduced a bill to designate the 1.5-million-acre 1002 Area as wilderness, thus precluding any further oil and gas activity. "Once we have undone this great and special place, we could never remake it," Udall has told his colleagues. But Representative Don Young (R-Alaska), ranking Republican on the Interior Committee, has countered with a bill to open the refuge to oil leasing. And in the symbolic race to sign up cosponsors for their bills, Young took an early lead. In late August, Udall had 90 cosponsors, Young 145.

One reason industry has launched an intensive campaign is that the statutory status quo favors conservation. Unless Congress votes expressly to open the 1002 Area, it will remain de facto wilderness closed to oil exploration and leasing. Another reason for the rush is undoubtedly that the oil industry wants a bill passed while the friendly Reagan administration is in office.

Secretary Hodel has made opening the refuge one of his top personal priorities. In both congressional testimony and press interviews, Hodel, formerly President Reagan's Secretary of Energy, has claimed that discovery on the coastal plain of 3.2 billion barrels of oil would reduce oil imports by nearly nine percent and provide net national economic benefits of $79.4 billion. One of the persistent themes stressed by Hodel and other proponents is national security. "Without the Arctic Wildlife Range [sic] resources," Senator Ted Stevens (R-Alaska) has asserted, "this nation faces the threat of a precarious future in which OPEC nations would be able to hold another and perhaps more serious embargo over our heads."

Conservationists have accused the Reagan administration of shedding crocodile tears over national security, noting its failure to promote energy conservation. The administration has pushed for a 65-mile-an-hour speed limit, tried to kill legislation requiring efficiency standards in electrical appliances and has relaxed fuel efficiency standards for automobiles. Christopher Flavin, researcher with Worldwatch Institute, a resources think tank, says that since 1973 the nation's automobile fleet has improved its gas mileage by six miles to the gallon and that one more mile-per-gallon improvement would save 420,000 barrels of oil a day.

"That's more than they would be getting from the arctic coastal plain, and that savings would continue indefinitely," he says.

"The administration's policy is to increase the demand for oil for reasons of personal comfort or convenience, and then to justify oil and gas development in sensitive environmental areas, indeed, in national environmental treasures, on the basis of national security," says Trustees for Alaska, an Anchorage-based environmental law firm. "The only winners are the oil companies that reap profits from petroleum product sales."

Critics also say the nation would be shortchanged by leasing new territory to the oil industry in a time of oil glut and low prices. "If leasing occurs, it will take place in a flooded leasing market," says David Cline, Alaska vice president of the National Audubon Society. "The return to the government is going to be minimal compared to what it could be. I think the economics is the Achilles tendon of this whole deal."

Despite its friendly posture toward the Reagan administration, the Conservative Party government of Canada is opposing the drilling proposal. Because the Porcupine herd migrates across the border between Alaska and the Yukon, the future of the calving ground is an international issue, Ottawa says. "The measures the U.S. has taken to protect complete arctic ecosystems have helped convince Canadians to proceed with complementary protection mechanisms, including the 3-million-acre North Yukon National Park," said an official government response to Interior's recommendations. "It would indeed be regrettable if these advances were lost, based upon an incomplete understanding of the total spectrum of the values of the region."

On the Canadian side of the border, where most of the Porcupine herd usually winters and where calving occurs in some years, oil development has been banned in the new North Yukon National Park. Ottawa has pointed out that most subsistence hunting of caribou by Natives occurs on the Canadian side. At the urging of Native groups in both countries, an agreement was signed this past July 17 requiring each nation to consult the other before taking any action "likely to cause significant long-term adverse impact on the Porcupine herd or its habitat." The agreement creates a two-nation advisory board to oversee the herd. The agreement's impact on the oil-leasing issue is unclear, however. Some oil proponents fear it could be an obstacle. On the other hand, Britisher Roger Herrera, a Standard Oil representative on the State Department's negotiating team, said during the negotiations that such an agreement would provide sanction for development.

Douglas H. Chadwick

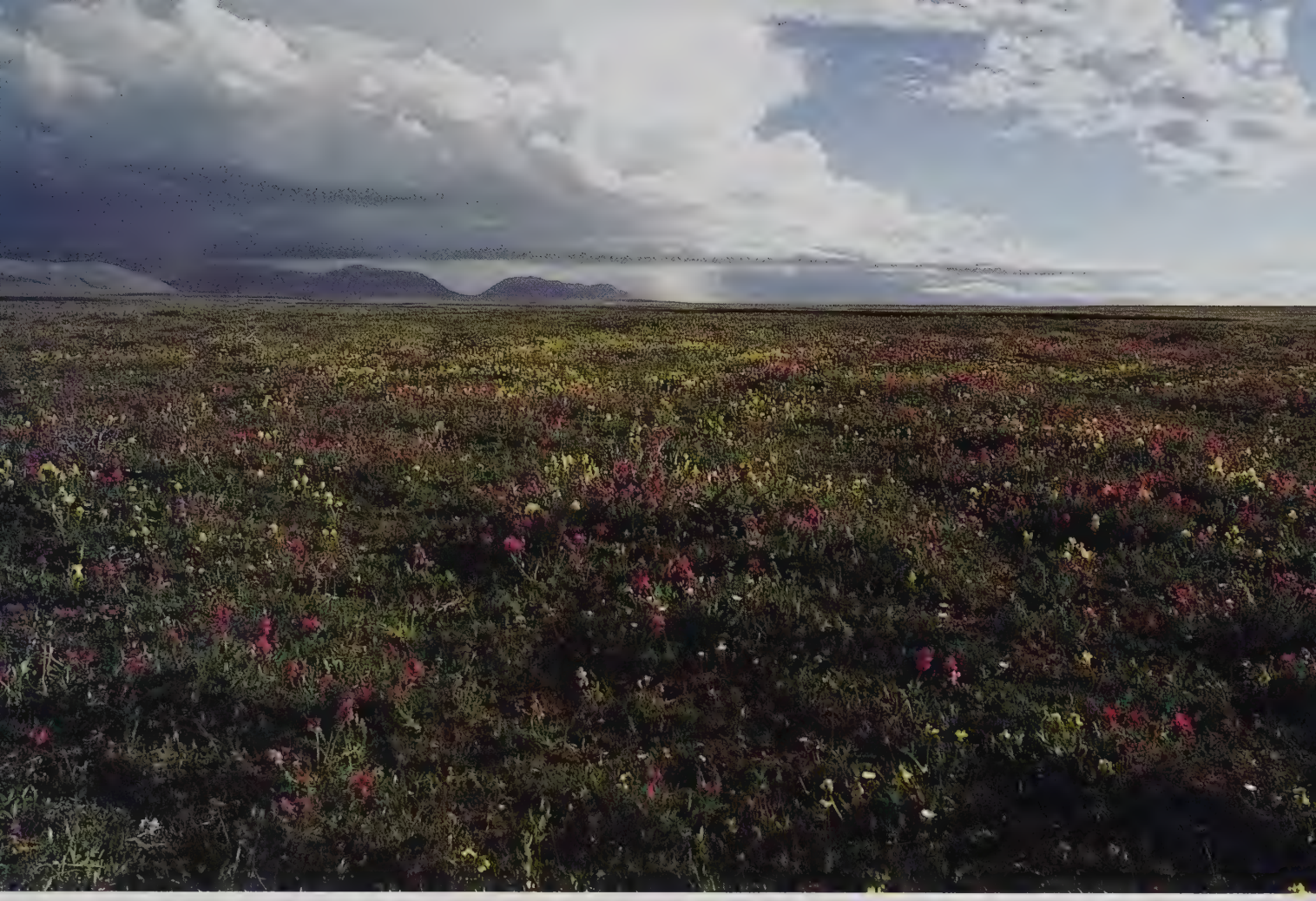
Chlaus Lotscher

Alaska Native groups are split on what ought to happen. The state's regional Native corporations in general favor the refuge oil-drilling proposal. Indeed, they have been negotiating for some time with the Interior Department to obtain the oil and gas rights themselves on 166,000 prime acres in the 1002 Area, in return giving the department surface control of certain Native-owned inholdings in other Alaska national wildlife refuges. The Native corporations propose to make their own deals with oil companies on the 166,000 acres. Newspaper disclosure of details of this intention prompted the House in early August to vote to block the trade unless Congress approves it. Leaders at Kaktovik, the only village in the 1002 Area, also are supporting oil development but have voiced concern about the welfare of the Porcupine herd. On the other hand, Alaskan Indian villages south of the Brooks Range, particularly Arctic Village and Venetie, are opposing the oil plans as a threat to the caribou.

Alaska's three-man Republican congressional delegation is closely allied with the oil industry effort to open up the 1002 Area. Most business interests in Alaska support oil-drilling, hoping for another boom that would improve the state's depressed economy. Some letter-writers to Alaska newspapers have made emotional pitches for development ("How many 18-year-old American boys are we to sacrifice to protect the caribou?"). Others have been equally strong for conservation ("There is just no getting around the fact that some areas must be left alone. Not 'until' and not 'unless.' Just alone, period"). Governor Cowper, a Democrat, has been taking a cautious approach, calling for delay in leasing the "core calving area" while further studies are made of the herd. His straddle has been criticized by conservationists. Cowper also has been criticized by pro-oil Senator Frank Murkowski, who has accused him of playing partisan politics.

Approaches like Cowper's have drawn the interest of congressional leaders looking for a stand between the polarized positions of the Udall and Young bills. Representative Walter Jones (D-North Carolina), chairman of the House Merchant Marine and Fisheries Committee, one of the key committees involved in the controversy, has proposed sweetening the pot for conservationists by dedicating revenue from 1002 Area oil-leasing to expansion and maintenance of national wildlife refuges elsewhere in the nation. A few sportsmen's groups have expressed interest in such an approach. Others in Congress have talked of substituting government-sponsored exploratory drilling for simply opening the door to oil companies.

Congressman Udall, of course, is an influential figure. But Ohio Representative John F. Seiberling, a key



A carpet of flowers, important caribou food, covers gravel bars of the Jago River in July. This is in the heart of the calving area. Cushion hawksbeard, Crepis nana, *brings diminutive beauty to another area riverbed (far left). Siberian phlox decorates a Hulahula River bluff close to the 1002 Area.*

subcommittee chairman during consideration of the Alaska Lands Act, recently retired. Representatives George Miller (D-California) and Gerry Studds (D-Massachusetts), chairmen of the House subcommittees that will handle the Arctic Refuge issue, were among leaders of the recent House action to counter the Interior-Native land-trade move but haven't yet taken a public stand on the Hodel 1002 leasing proposal. Miller, Studds and Senator J. Bennett Johnston (D-Louisiana), chairman of the Senate Energy and Natural Resources Committee, with other committee members planned to visit ANWR during the August recess, and all have said they will examine the leasing question in detail before Congress takes any action on it.

Confronted by well-financed oil industry lobbying and PR efforts, the Alaska Coalition spent the first half of this year scrambling for time to build its own grassroots campaign. "If the oil companies can seize the momentum, a lot of people who are reluctant to get into divisive, difficult votes might conclude that the oil companies are just too strong and the people out there demand oil development," says coalition chairman Mahoney. "On the other hand, they may have peaked early on a lot of hype, in which case we hope to be able to hold them off."

For both sides, the issues extend beyond the ANWR 1002 Area. The fight is becoming a test of environmentalist strength in Washington. Talk of "another Prudhoe Bay" makes this the oil industry's best shot at offsetting conservation gains of recent years. "The leaders of the conservation movement see this as a real bellwether," says Mahoney. "The oil companies are developing a formula for opening up any area they want. If national security can be waved as a red flag, if they can say, 'Of course the wilderness will be destroyed, but we can manage the animals so they won't become extinct,' if that's an acceptable environmental program, then the environmental cause will have really suffered a major setback."

Mahoney tries to put the stakes in the Arctic Refuge fight in perspective by citing what he calls a parallel situation with an untapped energy resource that Congress chose not to develop—the Grand Canyon. "Congress made a black and white decision," he says. "The Grand Canyon is a spectacular geological phenomenon. We dammed up and down the Colorado river around the canyon, but the Grand Canyon was so important to our country that dams were kept out of the park. In the Arctic Refuge, it's not the geology—it's the productive, concentrated biology that makes it so important. And the biology springs from the land. We have drilled for oil in the Arctic and have the potential to drill all around the refuge, onshore and offshore. But the coastal plain itself should remain pristine wilderness. This is our continent's best arctic ecosystem. It really is a black and white issue here, too." □

Tom Kizzia has written extensively for the Anchorage Daily News on life in the Alaska bush. He is at work on a book on that subject.

CULTURE AT THE CROSSROADS

For tiny Kaktovik, the conflict between drilling and preservation is threatening cherished ties with the past

by Tom Kizzia

One summer night in Kaktovik, I walked off across the soft mounded tundra. The midnight sun was a cool red ball speared by a cloud above the ice sheet to the north. Looking back toward the village, I saw new frame houses and gravel streets, power poles like masts in a harbor, and beyond the village the Cold War towers of a distant early warning radar station.

This was Barter Island, home of the north coast Inupiat, the caribou hunters. Congress is considering opening part of the Arctic National Wildlife Refuge, their traditional hunting ground, to oil development. How would the people of Kaktovik respond? Oil or caribou? Money and technology, or an ancient faith and tradition? The dilemma of the Kaktovik Eskimos is similar to the one before all Americans now that Congress is weighing the pros and cons of oil-drilling in this arctic wilderness. For the Eskimos who call the refuge home, however, the dilemma cuts right to the heart of their being.

By custom, the Native peoples of Alaska have been advocates of conservation—according to their understanding of nature, in which man uses the land but does not disrupt it. Their traditional way of life requires undeveloped land, plenty of habitat for game and unpolluted water for fish. Only in Alaska is the land still wild enough to provide for the kind of subsistence life typical of Native Americans before the coming of white civilization. For Native Alaskans, the subsistence life means more than food for the table. It goes to the very heart of their culture itself. Subsistence is the tradition that binds the people to the land.

Athabascan Indian settlements, such as Arctic Village south of the Brooks Range and Old Crow in Canada's Yukon Territory, still depend on the Porcupine caribou herd, hunting its animals throughout their winter range. The Indians of these villages are dead set against oil development on the coastal plain near Kaktovik, fearing that disruption of the summer calving grounds could jeopardize the herd. Speaking on behalf of the leaders of his village, Joseph J. Tritt of Arctic Village told the Department of the Interior: "Don't do to the caribou what your ancestors did to the buffalo."

The Inupiat Eskimos of Kaktovik also hunt the Porcupine caribou. But they have other things on their minds these days. Oil taxes have brought new facilities and jobs to Kaktovik, setting it apart from the poorer Indian villages to the south. Oil companies have actively courted the Kaktovik Eskimos with jobs and favors. The Reagan administration quietly pushed through a land trade giving them an economic share in any oil discovery. Increasingly, they have spoken out in favor of oil development on the coastal plain—though they speak with ambivalence, saying they don't want to drive away the caribou.

I asked myself, as I walked across the tundra that night: How can the Inupiat people hope to find a direction for the future from the traditions of their past, when they have been so overwhelmed by history?

Barely 50 years ago, the Eskimos of this region were living in houses of sod and driftwood. They wandered back and forth along the coast in search of animals to hunt. Barter Island, where Kaktovik's new houses stand in orderly array, was a trade site for the Inupiat for many years. It was the arrival in 1923 of a white Scottish trader and former whaler named Tom Gordon that established Kaktovik as a permanent settlement. Families came in order to be near the fox fur trading post set up by Gordon and his Inupiat wife and brother-in-law.

Kaktovik residents are proud of those origins. Old photos of Tom Gordon, looking like a dashing young rugby player, hang in many homes in the village. Several years ago, when a group of schoolboys from Scotland visited Barter Island on their way to a "march across the moors," as their trip leader put it, the teenagers of Kaktovik surprised them with a wienie roast, three-wheeler rides, fishing trips and a dance in the school gym. They were treated like long-lost cous-

Fran Durner/Anchorage Daily News

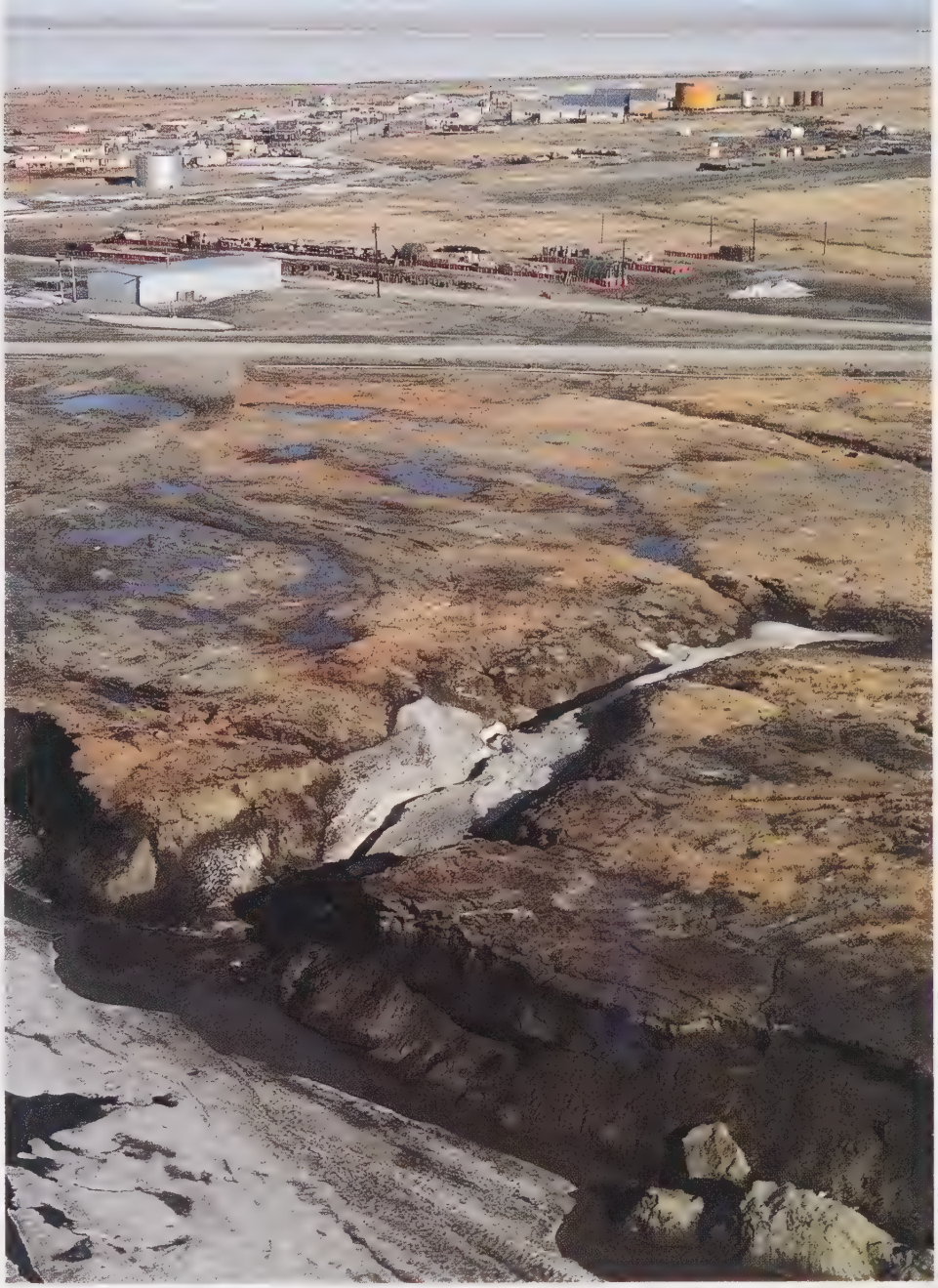
On Kaktovik Lagoon, the skull of a bowhead whale might be a symbol of the tradition linking Barter Island's Eskimos with the creatures of the sea.

ins, which perhaps some of them were. Gordon is still one of the most common surnames in Kaktovik.

After World War II, life took a dramatic turn for the Kaktovik Inupiat. The Air Force arrived to build a DEW Line radar station to watch for sneak Soviet attacks across the ice pack. In 1947 the Air Force told villagers to move their sod homes off the beach to make way for a runway. While children hid from the *kamanaq* (bossy) white men, doghouses were bulldozed flat, and ice cellars that had been chiseled out of the permafrost were caved in. The base meant jobs for a few villagers, but twice more in later years the houses were moved by Air Force expansion. Yet today all seems forgiven: the bulldozers, and the years when base employees were forbidden to enter Kaktovik or mix with the Eskimos. One day when I was in Kaktovik, villagers even forgave the base's civilian workers for remaining on military time, one hour different from the village next door, and showing up an hour late for the Fourth of July softball challenge.

Like the half-dozen other small communities across the North Slope of Alaska, Kaktovik today is a village of contrasts between old and new. Kaktovik's 200 residents enjoy a huge school with a swimming pool, and a fire station with two trucks and an ambulance—all paid for by property taxes on the Prudhoe Bay oil field a hundred miles to the west. But the houses have no sewer lines, and each family must empty its "honey bucket" into rusting oil drums stored outdoors.

A truck with a crane carries "honey" smelling of Pinesol out to the dump and returns with empty drums dragged in from the tundra where they were left many years ago by the military. The system may sound primitive, but a heated sewer line through the permanently frozen ground would be prohibitively expensive. Pickup service is in any event a big improvement over the old system, in which residents dragged their own filled barrels onto the sea ice. "We just kicked 'em off and let 'em go wherever drums go," explained Loren Ahlers, the village's part-time mayor.



Stephen J. Krasemann/Alaska PhotoBank

Canned and frozen food is now available at high prices in the village store, where Pepsi is the biggest-selling item. For villagers with jobs in the new borough facilities, hunting and fishing often are squeezed in after dinner or on weekends, or during special subsistence leaves. But hunting is still essential to village life, and not just for economic reasons. The year's calendar is still structured around subsistence seasons. Families still go to the mountains in early spring on snowmobiles, fishing and camping cheerfully under winter conditions that would send backpackers in the Lower 48 scampering for the nearest motel. Meat from the hunts is still shared with elders and other family members, in a kinship pattern that ties the community together. The meaning and strength drawn from nature through a wide range of subsistence activities are the Inupiat's reasons for living where he does. If the wild animals disappear, so will most of what remains of the Inupiat culture.

When the summer runs of arctic char begin, villagers gather by the lagoon in the evening to fish with rod and reel, switching to nets as the pace of harvest picks up. Kaktovik people hunt migrating bowhead whales in the fall, and whaling captains are important figures in the community. Many villagers say Dall sheep is their favorite meat, hunted in the mountains and preferred for Thanksgiving and Christmas feasts. But the menu most nights is some variation on caribou. Two years ago caribou were especially important because the pack ice blew in to shore early and villagers were unable to land a whale.

By the middle of July, when I visited Kaktovik, the Beaufort Sea ice pack had begun to back away from the land. This is the most productive hunting season. Hunters dragged their open motorboats across the shorefast ice to water. They motored along the beach, scanning the tundra for caribou that had moved out to the edge of the coastal plain in search of a breeze to drive off mosquitoes. I stood on the beach as the hunters returned home, a rich northern light in their eyes. Several men had been lucky. They hoisted from their boats animals the size of large deer, the hides patchy where light-gray winter fur had been shed. They said they had "caught" a few. Their word for successful hunting does not translate to "kill." Traditional Inupiat believe they must show gratitude and respect to the spirit of the animal so it will return the following year.

The Inupiat have fought politically to defend their traditions. For several years, Kaktovik Inupiat have worked with Indians from the Yukon River valley, enemies in the time before white people came, on a treaty to protect the Porcupine caribou herd. (An agreement acknowledging the importance of the Porcupine herd was signed by the United States and Canada on July 17.) Kaktovik has opposed offshore oil-drilling in the Beaufort Sea, fearing it would disrupt the fall migration of the bowhead whale. During the 1970s, Inupiat people spoke in behalf of federal protection for their land and their hunting and fishing rights. Under the Alaska National Interest Lands Conservation Act of 1980, traditional subsistence activities are allowed to continue in areas marked off otherwise as protected wilderness, areas like the Brooks Range south of Kaktovik, which is part of the Arctic National Wildlife Refuge. Not to allow for subsistence would have been to consign what remained of the Native culture to oblivion.

But Kaktovik's advocacy of wilderness is muted now by a new factor: capitalism. When Congress extinguished aboriginal land claims in Alaska in 1971, it awarded 44 million acres and nearly $1 billion to the state's Indians, Aleuts and Eskimos. Natives became shareholders in new

corporations, and those corporations got the land and money. Some 200 village corporations received lands around their commmunities. Twelve large regional corporations received other lands, along with the mineral rights beneath village lands. The effect has been to propel Alaska's 80,000 Natives into a more active role in the development of the state's resources.

Kaktovik received surface title to an inholding of some 92,000 acres on the coastal plain. When the Alaska Lands Act was enacted in 1980, the inholding seemed no threat to ANWR. The federal government retained oil rights under the Kaktovik land. For villagers at the time, having title meant having control over some of their traditional subsistence hunting and fishing grounds, nothing more.

But in 1983 the Reagan administration traded away mineral rights under the inholding to the development-minded Arctic Slope Regional Corporation, Kaktovik's regional "parent." In exchange, the National Park Service received acreage in the Brooks Range to add to Gates of the Arctic National Park. Arctic Slope Region, working with the Kaktovik village corporation, signed an exploration contract with Chevron and other oil companies permitting the drilling of three exploratory wells. One has since been drilled a few miles east of the village—the first inside the ANWR boundary. The results are still secret, guarded from village shareholders as well as the public.

I visited that Chevron well one morning, 15 minutes by helicopter from the village. Four Kaktovik women had flown out before me, hired for that day by an oil field contractor for $25 an hour to pick up trash—"stick picking," oil field workers call the lowly job. The drilling was finished, the equipment mostly gone. The exploratory well had been plugged. Timbers from the drilling platform were being donated to Kaktovik, which planned to use them in building a whale-landing dock. Chevron was scoring points for cleanliness, as well as for local hire. It was clear that the company hoped to come back to the coastal plain and drill many more wells.

If oil is found under the Native inholding, Kaktovik and Arctic Slope can't bring it to market unless Congress votes to open up the coastal plain. This gives Kaktovik a big financial stake in the decision of Congress. Archie Brower, the Kaktovik corporation president who helped negotiate the quiet 1983 land trade, makes no secret of his desire to see the coastal plain opened to leasing. "We're trying to go along with the regional corporation, but with some more restrictions that could help the village," Brower says.

A much more significant land deal has now been attempted by the Interior Department. Several years ago the department secretly began negotiating with a number of regional and village Native corporations to give them federal oil and gas rights on 166,000 additional acres of the ANWR coastal plain in return for surface control (but *not* subsurface mineral rights) in Native inholdings in other national wildlife refuges in Alaska. Conservation groups, after they learned of the negotiations, discerned a move both to get around the present legal bar to oil-drilling on federal ANWR land and to build a politically potent pro-oil Native constituency throughout Alaska. Recently they went to court asking that Interior be required to prepare an environmental impact statement and hold public hearings on the proposed exchanges.

The court case is still pending, but in July Interior officials and a group of the Native corporations completed an agreement for the 166,000 acres, which the Native corporations have in turn agreed to lease to major oil companies. However, the story was leaked to *The Wall Street Journal.* After the deal was sharply criticized by several members of Congress, Assistant Secretary of the Interior William P. Horn said the department had planned to make the plan public and would not proceed without congressional approval. Skeptical members of Congress have since introduced legislation that would expressly bar the department from going ahead on its own, and the House early in August approved language for this purpose.

The Inupiat people have always been clever and quick to adapt—that has been a key to the success of their culture in the harsh north. But now they have struck a deal with the world of fuel oil and pickup trucks. The new native corporations are only one aspect of that deal. Property taxes on the Prudhoe Bay oilfield have pumped hundreds of millions of

Fran Durner/Anchorage Daily News

The three-wheelers and fishing rods of four Kaktovik residents angling for arctic char reflect the same break with the past as the modern buildings beyond the water. Opposite page, a view of the tiny community, looking across Barter Island toward the mainland and the snow-capped Brooks Range.

dollars into the North Slope villages. Kaktovik has new homes, a health clinic, fire engines. Life is more comfortable, and no one wants to live underground again in houses of sod. But not all change has been for the better. Social scientists and community leaders say rapid transformation and modern stress have caused an increase in alcohol abuse and family disruption in the half-dozen small villages of Alaska's North Slope. Villagers look upon the change as forced growth imposed upon them.

"The old people are more secure in their values. But the change is so fast, it's tough on the young people," said Mayor Ahlers, a white man who came to Barter Island to work at the radar site and married into the village. "The effect of all this money is something none of us ever realized. We're trying to think of ways to get the community back, away from TV, away from all the drinking."

Tommy O. Gordon, the 67-year-old grandson of Kaktovik's original Scot, seems resigned to the coming of oil. "If they ask me, I say no," he told me. "But I can't stop it, I guess." He remembers seasons of starvation growing up in camps along the coast. One winter he and his sister had to walk 60 miles from Demarcation Point to Barter Island three times for supplies. "You can't live around here without money any more. If there's no oil companies around here, everybody's going to be hungry," he predicted.

Even schoolchildren are drawn into the cash economy. During my visit, they were picking up trash around the village, filling bright yellow plastic bags for $8 an hour. Village cleanup used to be a major community event in which everyone took part. "Looks like everybody doesn't want to work for free any more," said Isaac Akootchook, a village elder. "We used to work together because this is our home. The community spirit is getting broken up."

Sociologists who examined the village during preparation of the Interior Department's study of the coastal plain concluded that oil development would cut down on subsistence resources, restrict hunting access and "hasten changes from a life style based on subsistence and community sharing and a dependence on the land to a society with a cash-based economy."

Village leaders remain hopeful that change will not mean loss—that they can have new development and also keep the old traditions. Like many other Americans, they appear to prefer avoiding a hard choice. Already, however, they are seeing change in their traditional hunting region, simply under pressure of the biological and geological studies ordered by Congress. In 1985, when the federal government had two helicopters and three airplanes flying out of Kaktovik on various studies, Eskimo elders complained that the commotion was scaring away the caribou. They said there wasn't any privacy on the land anymore with government people watching from the sky, caribou running past with flags in their ears and radio collars around their necks, fish with wire antennae hanging out of their mouths. In the building that

Fran Durner/Anchorage Daily News

Kaktovik hunter Isaac Akootchook and his wife Mary pose with grandchildren Berdell and Bob Gerard. Facing page, another hunter and his daughter with a young grizzly shot after wandering into the village from the Jago River delta and raiding a meat-drying rack.

housed the village generator, someone had posted a cartoon of a caribou-like deer shooting up with drugs and telling another deer, "It all started when Ranger Ted shot me with a tranquilizer dart."

Few in Kaktovik want to talk about the far greater disruption oil development would bring to the coastal plain, with roads, traffic and outside workers. As the time of decision in Congress drew near, one or two villagers were still willing to speak out against oil, even though that means challenging the tradition of consensus politics which makes it hard for an Inupiat to criticize his neighbor. Isaac Akootchook, a respected hunter in his 60s, was one of these. His father was a Presbyterian minister, the right-hand man to old Tom Gordon, but he was also a great Inupiat hunter. He provided meat for the trading post and helped establish the village. When we talked, Isaac Akootchook said the oil question has caused lots of arguments in the village. "People don't like that up here. People never get used to it," he said. Still, he took the long view, seeing a choice between short-term profit and long-term survival in their ancestral home. "If oil people come, maybe the caribou are gonna move away, who knows?" he said. "When the oil is gone, what you gonna do?"

Doug Plummer

Oil is already near. Children told me that on clear nights in winter, they can see the gas flares of Prudhoe Bay lighting the sky beyond the western horizon. As I walked across the tundra on my midsummer night's hike, I looked at the distant pink and gray sky and tried to imagine this country in winter. A hundred miles away at Prudhoe Bay, oil field workers have nothing but bad jokes to tell about life at this latitude. What is it, I wondered, that sets the Inupiat apart from the oil worker?

I was walking along an old whaling beach toward Kaktovik Lagoon. Bleached skulls lay where bowheads were butchered years ago. They were surrounded by rusting oil drums. I stopped near the point and looked south to where the Brooks Range glowed faintly in the midnight sun. At my feet, a board rose out of a grassy mound. This was the grave of Pipsuk, whose death gave Kaktovik its name. In the Inupiaq language, Kaktovik means seining-place. The Eskimo Pipsuk had come here to the lagoon to seine for fish from his skin boat. He fell into the water and drowned, and later his people came to this place to seine for his body.

The faint rolling sound of surf was interrupted by a whine from the village—another midnight renegade on a three-wheeler. I looked up with annoyance. The spell was broken. A distant figure chased by a cloud of dust sped around the far end of the lagoon and accelerated onto the airstrip. The vehicle shot up a 50-foot-high mountain of gravel left by construction projects, a favorite place for hot-shot acrobatics. But instead of making a pirouetting descent, the figure on the three-wheeler stopped and killed the engine.

The sound of surf returned. Across the lagoon, the rider sat silhouetted on the machine and gazed north across the ice. The figure stood on the seat and looked out to sea in the direction of the cool red sun. We waited there for several minutes, the lone rider and I, each of us lost in dreams of our own traditions. Then the figure resumed his seat, roared down the gravel mountain and raced back to the village as fast as the three-wheeler could travel. □

SUMMER ON THE SHEENJEK

A river valley in the Brooks Range works its magic—with birds, flowers, wolves, grizzlies and migrating caribou

by Margaret E. Murie

Apart from its size and remoteness, what is distinctive about America's second-largest wildlife preserve, the Arctic National Wildlife Refuge? One answer is that its creation by Congress in 1980 culminated many years of effort by a small number of dedicated wildlife and wilderness enthusiasts in and beyond Alaska. Two of them were Olaus J. Murie, a wildlife biologist who did pioneering research in Alaska for the federal government and became a leader of the nation's wilderness preservation movement, and his wife Margaret, who grew up in Fairbanks and was the second graduate and first woman graduate of what is now the University of Alaska. Since her husband's death in 1963, she has been an influential advocate for Alaskan wilderness in her own right through her writings and continuing ties with Alaskan conservationists.

In 1960 the Muries helped persuade Secretary of the Interior Fred Seaton to establish the 8.9-million-acre Arctic National Wildlife Range, which Congress in 1980 enlarged to 19 million acres and renamed. Except for part of the Beaufort Sea coastal plain, the original range became a unit of the national wilderness preservation system. The Muries camped in the Sheenjek River valley in the heart of this choice wilderness country in 1956 and again in 1961. Through the 1956 summer their companions were two young career wildlife biologists, Robert Krear and George B. Schaller, and a young ornithologist, Brina Kessel. Mardy Murie, a long-time member of Defenders of Wildlife, here recalls her first impressions of the Sheenjek, part of the range of the great Porcupine caribou herd, in the context of the possibility that 1.5 million acres on the Arctic Refuge's coastal plain will be opened to intensive oil exploration.

June 1, 1956. The little float plane swooped down onto the still-frozen lake. Its wheels spun merrily along to a stop in front of two tents near the shore, and Bob Krear and George Schaller were running out on the ice to greet us. In a few moments, Olaus and I and Brina Kessel of the University of Alaska and all our gear had been transferred into this new world and the sound of the little Cessna was fading in the distance. A float plane leaves no marks.

How quiet! How absolutely still! But just then, George's voice, excited: "Look, look, beyond the end of the lake, across the river, on that grassy slope. See? Two grizzlies! They seem to be playing with each other."

Two blond grizzlies! Our introduction to the Arctic. Stillness, yes, but there were voices, too, and as the enchanted days went by and we roamed that whole hospitable world of the Sheenjek Valley, we learned to know them. A cock ptarmigan talking from the tip of a small spruce, keeping guard over his mate already on her eggs, invisible in a tangle of dwarf birch. Oldsquaw ducks in busy conversation in the narrow strip of water at the edge of the lake. Arctic loons calling from a small pond not far from our camp. And as the ice

George B. Schaller

melted, more of the customary residents were arriving—swans, arctic terns, horned grebes, scoters zooming over our heads. And it seemed strange, in that season of perpetual daylight, to hear great horned owls hooting at all hours and to hear and see, in this place which felt so far away and different, flocks of friendly robins—just like back home.

The magical time in the Arctic is the first two weeks of June. Here we were, at the edge of the south face of the Brooks Range, in a gentle valley, and everything was happening. It has to happen very fast at this latitude. The ice is going off the lake, the birds are coming, many of them already nesting; the vegetation is rapidly turning from brown to green, and by the 13th of June everything is in bloom, most excitingly the rose-red *Rhododendron lapponicum,* great mats of it on all slopes of this valley.

We were a party of five, and we went off each morning in three or four different directions, exploring, making notes, photographing, then happily reporting all our adventures each evening in camp. In those first two weeks we had already seen: the grizzlies, the wolf after whom we named our unnamed lake "Lobo," and several other wolves; a red fox, a lynx, several moose, three more grizzlies and many groups of caribou, moving from the east and north westward and southward with their young calves to enjoy the summer. And in that memorable 1956 season the land gave us real summer—warm days and sunshine, temperatures up to 76 F.

Philip D. Martin

A breeding pair of oldsquaw ducks in the icy springtime. Top, Olaus and Mardy Murie leave Last Lake on July 20, 1956, on a five-day backpacking trip toward the head of the Sheenjek River. The Murie party gave the lake its name.

Then, in my diary for June 14: "The mosquitoes arrived today!" But there is a way of dealing with these inhabitants, too—the sleeping tents were bug-proof. On rising in the morning, rush to the lake shore and wash your face, smear on some baby lotion, then the mosquito-repellent cream, hands and face; keep a tube of repellent in your pocket at all times—it wears off in about an hour. In the valley of the Sheenjek there is nearly always a gentle breeze, which helps, and we tried to stay out in the open when hiking, away from the numerous stands of small spruces, where the bugs were

thicker. So now, when I look back on those happy weeks, I just don't remember mosquitoes!

To add to the intense significance of that entrancing summer, we had with us from June 15 to July 4 our dear friend from Jackson Hole, Dr. Don MacLeod. He and Olaus went tramping across the tundra and the wooded slopes and along the river every day, finding always more than enough fascination, including not only discovering, but crawling into, the winter den of a grizzly. On June 26 our fine pilot friend, Keith Harrington, came again and in four flights moved all of us to a new camp 18 miles upstream on a lake we named Last Lake, because the Indians had told us it was the last real lake on the upper Sheenjek. Here the days flew by, Brina setting out experimental plots to study the vegetation, mammals, birds, tramping miles every day, sometimes staying overnight at some plot; Don, Bob and George off on a four-day backpack trip out of the Sheenjek Valley and into the valley of the Coleen River east of us.

After Don had left, George went off on a nine-day trip which he and Olaus had been planning—to give us more knowledge of the country to the west. He came back on the tenth day, tired, hungry, with shoe soles' worn through, but having explored the watersheds of the Chandalar and Hulahula Rivers, seen mountain sheep and watched part of a caribou migration, probably some of the same migrating 2,000 animals Brina, Bob, Olaus and I had watched in ecstasy from the slope above camp on July 16—a culmination of all the good things the Sheenjek had already shown us.

But there was still more to come before we had to leave this paradise. Olaus and I had a perfect five-day trip toward the head of the Sheenjek in ideal weather. One of the sweetest memories of those days was finding violet-green swallows nesting in the very last willows—our "farthest north," latitude 68°36′. Back at camp, we welcomed Justice William O. Douglas and his wife Mercedes, who shared with great enthusiasm our last week on the Sheenjek. August 8 came too quickly, and with it the first signs of autumn in the Arctic, and our reluctant return to civilization.

In 1961 Olaus and I went back to the Sheenjek, again to Lobo Lake, again flown in from Fort Yukon by Keith Harrington. He had not flown to Lobo since the previous year when he had taken in an oil search party, and now he was as horrified as we were to find the one blot on that lovely place. Just two or three hundred feet from our old camp place were all the remains of that oil camp—wooden oil cases, all kinds of paper and trash, cans and bottles. On our return home to Wyoming, I wrote an impassioned letter to the head of that oil company, and I received a very apologetic letter from him in which he said that he cared as much about the wilderness as we did! Later we learned that the camp had been cleaned up. I suppose we were especially shocked by that one display, because our time in the Arctic had made us realize how vulnerable that type of ecosystem is—by its own nature, growing so slowly on top of the permafrost.

As of now, we have a divided empire up there in the northeast corner

George B. Schaller

Wilbur Mills

A Sheenjek wolf curiously eyes a rare human visitor. In August, 1956, the late Supreme Court Justice William O. Douglas eats Logan bread baked by Mardy Murie in her sheet-iron Yukon stove at the Last Lake camp. Opposite, cottongrass photographed by George Schaller on his 1956 trip exploring the East Fork of the Chandalar River.

of Alaska. East to west it is divided by the mountains, the Brooks Range, and that range is still largely its untouched self. And since our first trip to the Sheenjek we have had the establishment of the Arctic National Wildlife Refuge, much enlarged in 1980, plus the national park areas: Gates of the Arctic, Kobuk and Noatak. I quote here from a letter from a friend who helps guide small parties hiking or canoeing in that region: "Backpacking again, exploring two familiar valleys running back into the Brooks Range. We never saw another person or sign of a person during that time. Just thousands of caribou heading south for the winter, lots of sheep, four bears and a wolverine. And beautiful fall foliage!"

The North Slope and the tundra plain to the Arctic Ocean give us a different picture now. What price are we as a nation paying for whatever amount of oil may be extractable up there? There are two big questions: first, the potential impact of the whole oil operation on the wildlife, and second, the impact on the way of life and future of the Native people who have been living in that country for thousands of years without altering it to any degree. When all the nonrenewable resources of arctic Alaska have been dug up and piped away, what is left for Alaska? This affects all of Alaska, of course, but more directly the Eskimos.

Tom Brown's book *Oil on Ice,* published by the Sierra Club in 1971 when the Alaska pipeline was only in the planning stage, is still full of thoughts for today. In his introduction, Richard Pollak says: "Despite all the superlatives employed to describe the black pool beneath the North Slope, the crude there would satisfy no more than five per cent of the U.S. demands, once it began flowing to market through the pipeline. True, that percentage could be increased, but only by gradually pocking the rest of Alaska with oil wells and crisscrossing the landscape with more and more pipelines. Predictably, the oil industry vigorously denies such expansionist aims—all the while poking around in the wilderness for other fields to tap."

What was true in 1971 may not be entirely true today. But what is happening in the wilderness of the Arctic National Wildlife Refuge today? Can we sit and dream that after the poking around and drilling and heavy equipment traffic which may happen there, the oil men can in a few years be satisfied and depart, leaving that fragile part of our world as it was before? Can they leave the streams unpolluted, the tundra unmarked, the animals still roaming free? Is the Arctic Wildlife Refuge such an unimportant piece of Alaska that we can afford to ignore what happens there? Can we afford to ignore what happens to the life and the culture of the Native people?

We need to force ourselves to look back over United States history. What have we done to our continent in those 200 years? Alaska is the last great treasure of unspoiled country. And it is a treasure which can be renewable, self-perpetuating, supporting an economy based on travel and fisheries and scientific research. As for the North Slope, maybe few want to go there, but doesn't it mean something to know that it is there? Do we owe it some care? □

SAGE

Continued from page 7

inescapable side effects caused by having some 6,000 people working in the area. There is noise pollution arising from vehicle and aircraft activity; there is visual pollution arising from the presence of buildings, feeder pipelines, power lines and so on; and there is periodic air pollution. In short, Prudhoe Bay is an intrusive obscenity in what was formerly a largely unspoiled environment on the edge of the Beaufort Sea.

What has been the effect of the Prudhoe Bay development and the Trans-Alaska Pipeline on the caribou? The industry claims that all is well but has consistently chosen to place different interpretations on the data from those arrived at by the researchers themselves, and Alaska's Department of Fish and Game says that the animals are having problems. Whilst it is still too early to assess the long-term effects of the pipeline on these animals, the evidence so far available shows that it has caused changes in the behavior of the caribou that are likely to be detrimental in the long term. For example, cows with young calves tend to avoid it.

F. G. Larminie, a senior BP executive in Alaska in the early days of the Prudhoe Bay development, recently stated that the Central Arctic caribou herd (now about 15,000 animals) which frequents the Prudhoe Bay area has not suffered in the least and has been increasing at between 12 and 18 percent over the last decade despite the oil industry's activities. However, some caribou researchers consider that the increase may actually be explained by the decrease in the wolf population of the area as a result of illegal shooting by truck drivers traveling to and from Prudhoe Bay, one more adverse side effect of the pipeline. Be that as it may, caribou habitually retreat to the coast when the weather is hot and still, in order to escape the hordes of mosquitoes. The expansion of development east and west of Prudhoe Bay has markedly reduced the extent of the area to which they can thus escape. Furthermore, many female caribou formerly calved in the Prudhoe Bay area but no longer do so.

If Congress sanctions the leasing of 1.5 million acres (virtually the entire coastal plain) of ANWR for exploration, inevitably followed by development if oil is found, then it will be underwriting the permanent defilement of what is undoubtedly the finest wildlife refuge in the United States. What we shall see is massive development some 100 miles east of Prudhoe Bay, with feeder pipelines to the Trans-Alaska Pipeline, large-scale human intrusion, the total loss of the wilderness atmosphere and major disruption of the Porcupine caribou herd, whose calving grounds are sited on the coastal plain.

It is indeed a remarkable feat of political agility that the Department of the Interior, responsible for the establishment of ANWR in the first place, can execute a backward somersault and now recommend industrial development. It is disturbing that the department's conclusions do not seem to reflect the findings of its own scientists, for in the body of the report these state that "long-term losses of fish and wildlife resources, subsistence uses, and wilderness values would be the inevitable consequence of . . . development." Once the oil industry enters ANWR it will initiate adverse changes that can never be reversed. Does America really want to destroy such a magnificent part of its own heritage? ☐

Bryan Sage worked for 21 years for the British Petroleum Company as an ecologist, three of them in Alaska. He has written books on Alaska, the Arctic, the Antarctic and their wildlife. His home is in England.

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Whales and 'Research'

At Bournemouth, the IWC acted to curb the use of subterfuge to evade the commercial-whaling moratorium

by Maxine E. McCloskey

I RETURNED from the 39th annual meeting of the International Whaling Commission (IWC), held in late June in Bournemouth, England, in a mood of guarded optimism. The meeting could go down in history as the occasion at which the commission actually put the long-awaited moratorium on commercial whaling into effect.

Commercial whaling was officially halted in 1982, ten years after the U.N. Conference on the Human Environment adopted a resolution calling for a ten-year moratorium. The IWC adopted an amendment to the quota schedule that set zero quotas on commercial whaling worldwide starting at the end of 1985 and continuing indefinitely. Although the ban can only be altered by a three-fourths vote in the commission, there is a pre-established loophole. The Convention of 1946 that set up the commission provides that member nations can issue permits in their countries to "kill, take and treat whales for purposes of scientific research," with any restriction on numbers left to the judgment of the contracting government. Nations can bypass the moratorium either by issuing permits for so-called scientific research whaling or by having submitted written objections to the moratorium within 90 days of its adoption in 1982.

The commission reported earlier this year that, despite the zero quota set by the ban, 6,391 whales were killed last year (ten years ago the quota was 23,520). Of these, 2,769 were taken by Japan, which was still exempted from the moratorium because of an agreement negotiated with the United States permitting it to continue commercial whaling until this year. A similar number were taken by the Soviet Union, and 380 were taken by Norway—both whaling under objection to the moratorium. The "scientific whaling nations," South Korea and Iceland, took 380 and 116 respectively. Eskimos in the United States, Greenland and Siberia took 347 under a special aboriginal subsistence whaling rule.

In an attempt to narrow the scientific research whaling loophole and ensure that only bona fide research is conducted, the United States submitted a resolution establishing four criteria to be considered by the scientific committee in reviewing research whaling proposals and making recommendations to the commission. The criteria were that proposed projects must answer "critically important research needs," that the numbers of whales taken will not adversely affect the stock of the species in question, that the goals of the research cannot be achieved by nonlethal techniques and that "research is likely to yield results leading to reliable answers to the question or questions being addressed." After determining whether a proposal meets these criteria, the commission would advise the nation on whether the permit should be issued.

Bitter resistance to the resolution came from the whaling nations. They particularly objected to the commission's assumption of a new role as adviser to the scientific research whaling nations on whether the research plans are or are not acceptable. But the United States commissioner, Dr. Anthony J. Calio, who is administrator of the National Oceanic and Atmospheric Administration, was forceful and effective in his determination to see the resolution pass. The vote was 19 to six for the resolution, with seven abstentions.

Following the vote, the scientific committee reported its evaluations of the scientific research proposals for the coming year submitted by the Republic of Korea, Iceland and Japan. The commission voted to recommend that all three countries refrain from issuing the special permits or revoke those already issued. Japan brings in whale meat from its expeditions and imports meat from the other nations for sale—primarily for human consumption.

The prospects for next year are uncertain. The Soviet Union has announced termination of its commercial whaling operations, although it has not withdrawn its objection, thereby reserving its right to resume. Norway announced that it will stop commercial whaling but has not said whether it will withdraw its objection. It is expected to attempt to issue a permit for scientific research whaling next year in order to kill 200 minkes, the smallest commercially hunted whales ("Norseman vs. Minke," DEFENDERS, May/Jun 84). It has not yet submitted a formal proposal explaining the goals of the project.

Whether the commission's strengthened resolve will have a chilling effect on Norway's plans remains to be seen. It also is not clear what Korea and Iceland will do. Will they defy the commission's advice and continue whaling under the guise of scientific research, or will they stop at least for the rest of this year? Iceland already had started its research whaling before the IWC meeting and took 80 fin whales by the season's end in July. A month after the meeting, the fisheries ministry of Japan announced that it does not intend to abandon its plan to send out research expeditions in December that are authorized to kill 825 minkes and 50 sperm whales in

See McCLOSKEY, page 44

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FIELD REPORT

OTTER AIRLIFT LAUNCHES COLONY

For the first time in this century, sea otters are swimming again off San Nicolas Island, 60 miles from the southern California mainland. Two dozen of the appealing marine mammals were airlifted to the island by the U.S. Fish and Wildlife Service with the aid of the California Department of Fish and Game in late August, the first of 70 with which biologists hope to start a reserve breeding colony to ensure survival of a California otter population in case of lethal oil tanker spills. Twenty were released (two others escaped) from their holding pens several days after arrival as another two dozen were being captured near the mainland. Although three of the first group died at San Nicolas and one of the second in a mainland aquarium, biologists are optimistic that most of the otters soon will be contentedly at home in the new waters.

Hostile shellfishermen tried legal action to stop the project. Ventura County Superior Court Judge Kenneth Yegan denied them a temporary restraining order, but a spokesman said they would try again in federal court. The fishermen, who object to otter consumption of commercially valuable abalone, earlier failed to derail the plan at the administrative level. The California Coastal Commission voted 7-5 in favor July 7 and the Fish and Game Commission 3-2 August 18 after a long campaign by Friends of the Sea Otter, Defenders and other groups. California has about 1,650 otters, fewer than a tenth as many as a century ago before they were nearly wiped out by fur traders. The federal government lists them as threatened.

HELP STILL NEEDED IN BOND EFFORT

Californians for Parks and Wildlife still needs volunteers to circulate petitions to put a big environmental bond issue on the ballot. For forms: CPW, Suite 203, 909 12th Street, Sacramento, CA 95814 (916-448-1786). Petition deadline is November, and the voting will be next June.

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edited by
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- Thirteen appendices, including: directories for key federal offices, personnel, and programs; budget overviews; congressional contacts.

CONTENTS: Foreword by *Donal C. O'Brien, Jr.*, Chairman, National Audubon Society Board of Directors. **The Featured Agency.** The Bureau of Land Management. **Federal Agencies and Programs.** Federal Grants for State Wildlife Conservation. Migratory Bird Protection and Management. Federal Inland Fisheries Management. Federal Marine Fisheries Management. The Federal Endangered Species Program. Marine Mammal Protection. Federal Wetlands Protection Programs. Water Projects and Wildlife. The Federal Animal Damage Control Program. The National Wildlife Refuge System. Wildlife and the U.S. Forest Service Wildlife and the National Park Service. International Wildlife Conservation. Federal Fish and Wildlife Agency Budgets. **Species Accounts.** The Walrus. The Mission Blue Butterfly. The Wood Duck. The Bobcat. The Lynx. The Cui-ui. The Running Buffalo Clover. The Black-footed Ferret. The Southern Sea Otter. The Red-cockaded Woodpecker. The Elk. The Piping Plover. The Black Bear. The Rough-leaved Loosestrife. The Paiute Trout. **Appendices.** A. Forest Service Directory. B. U.S. Fish and Wildlife Service Directory. C. National Park Service Directory. D. Bureau of Land Management Directory. E. Wetlands Management Directory. F. Federal Offices Involved in the Management of Marine Fisheries and the Conservation of Marine Mammals. G. Budget Information Contacts on Federal Fish and Wildlife Programs. H. Congressional Contacts and Addresses. I. The Federal Endangered and Threatened Species List. J. The National Wildlife Refuge System Directory. K. The Land and Water Conservation Fund: Appropriations by Area, 1981–1987. L. The National Forest Plan Status Report. M. Federal Wildlife Agency Budgets. Index.

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TW/GD

MAILBOX

Turncoat Coyote-Killer

I am so infuriated, so incredibly angry at DEFENDERS for publishing the "Turncoat Coyote-Killer" story (Jul/Aug 87) that I will never send another cent to your organization—ever again.

It was so sickening for me to read how many thousands of animals this government killer (Dick Randall) wiped out and how horribly efficient he was at his task. The part about the bobcat, caught in the steel jaw trap, really broke my heart.

What I really don't understand is how you found Douglas Chadwick. This incredibly insensitive writer hasn't the slightest idea who he is writing for. His story seems more appropriate to a magazine glorifying hunting and trapping than a conservation journal. In the end it was Chadwick's attitude, his glowing admiration of Dick Randall, that changed my mind about Defenders.

Robert E. O'Brien
Garden City, New York

I just finished reading the article on Dick Randall, "Wyoming's Turncoat Coyote-Killer." Mr. Chadwick did an excellent job firing up my emotions and thoughts throughout the article. I felt very close to Mr. Randall, like I'd known him a long time.

Being from Wyoming, I know how much power ranchers have in this state. Their influence over congressmen (many ranchers themselves) is frustrating. I've written many letters in support of the reintroduction of wolves to the Yellowstone area. The responses are usually negative. The article on Mr. Randall gave me the inspiration to keep trying.

Please continue the excellent quality of articles published in your periodical and I'll try to keep my support coming in.

Kathy Hill
Cheyenne, Wyoming

This is the first time I've ever written to DEFENDERS, but I just had to comment about the article on Dick Randall. It's tragic that so many fine bobcats and coyotes had to die before his guns and traps before he finally turned to capturing them with a camera. Randall doesn't seem to have much feeling towards those he murdered—it was a job to do and he was good at doing it. Saddest of all was the remark of Randall's son regarding the dying bobcat caught in a trap: "Look, Dad, the light went out of its eyes." Did the son feel anything as he watched a magnificent cat die? I did. I cried.

Please, *don't* write about such people again or show pictures—in color!—of them with their "trophies." I'd much rather read about people like George Schaller, Hope Ryden, the late Dian Fossey and others who didn't have to murder their subjects before they took to studying them and photographing them.

Karen Kuykendall
Casa Grande, Arizona

I just finished reading "Wyoming's Turncoat Coyote Killer." I want to express my appreciation for men like Dick Randall. I admire him strongly for standing up for what he believed in, especially after his realization that what he was doing was wrong. A very good article. Congratulations.

Carolyn Thompson
El Paso, Texas

I read with great interest the article "Wyoming's Turncoat Coyote-Killer." It was gratifying to read Mr. Randall's observations on predator control, which support many of my suspicions.

I think it would be a good time to initiate a program to promote the welfare of coyotes and bobcats. I'm sure many "Defenders" reacted as I

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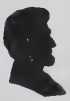

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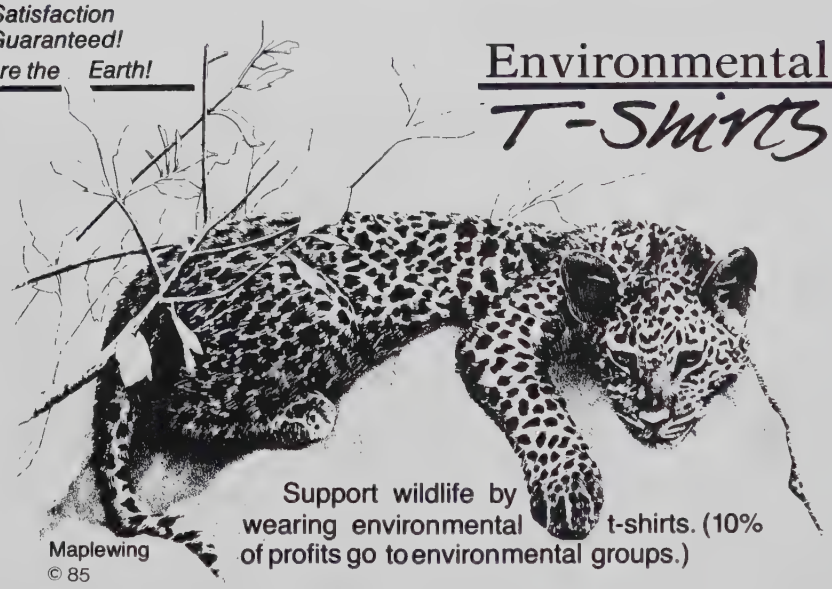

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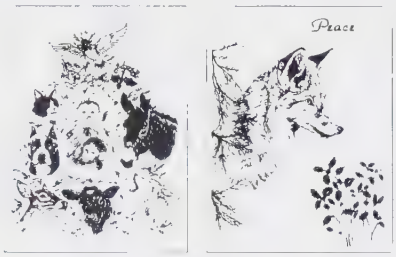

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have done to the article I refer to. I, for one, will willingly contribute to any such programs that Defenders will promote.

Lydia C. Giglio, Ph.D.
New York, New York

McCLOSKEY

Continued from page 39

the first year of an eight-year program.

Resolutions adopted by the commission, unlike amendments to the quota schedule, are not binding. However, world opinion, which bolstered the commission's resolution, may have a deterrent effect. Because the IWC has no enforcement powers, it is dependent for enforcement on its member nations. The United States is the only country with laws that call for sanctions against nations that diminish the effectiveness of international fisheries conservation agreements (this includes whales).

The Pelly Amendment allows the President to stop imports of fishery products from offending nations, which could greatly influence Iceland and Norway. The Magnuson-Packwood amendment requires the Secretary of Commerce to halve the fishing allocations of offending nations within the U.S. 200-mile limit. It is already being applied against the Soviet Union over whales but will be rescinded as soon as the Soviets withdraw their objection to the moratorium. It could be applied against the Republic of Korea and Japan. Discussion between U.S. officials and representatives of the five nations involved are underway. At this writing it is not possible to assess the effect of the death of Secretary of Commerce Malcolm Baldrige in late July. The secretary set a strong anti-commercial whaling policy.

For the moment, it appears that another significant step has been taken by the commission on the long path toward ending commercial whaling. How the whaling nations respond remains to be seen. World pressure must continue to be brought to bear on Korea, Iceland, Japan and Norway. □

Maxine McCloskey is a founder of the Whale Center of Oakland, California, and a member of the board of directors of Defenders of Wildlife. She attended the IWC meeting as an observer for the Whale Center.

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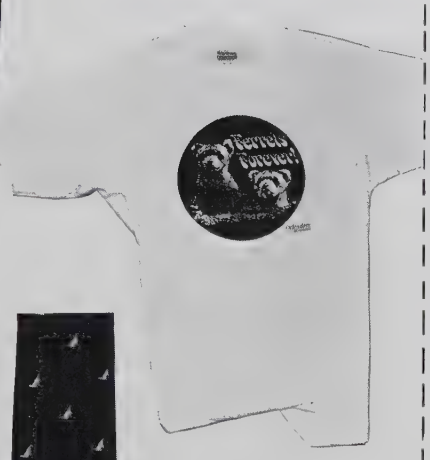

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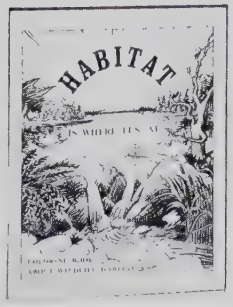

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MONARCH OF THE SEA ICE

NOT GETTING a job upon completing a master's degree in fine arts was the best thing that ever happened to me. It was six years into the Great Depression, and having lived all that time at poverty level I was ready to go anywhere and do anything. Providentially, that was the exact time my uncle Charles Traeger, trader in an Eskimo village, offered me a visit to his village including free board and room. I accepted immediately, not realizing as I did that my destiny had beckoned, albeit disguised in parka and mukluks.

The colorful lifestyle of the Eskimos, the effects of low-level sun on ice and snow, the unbelievable aurora, the handsome sled dogs all worked a magic spell. Six weeks stretched to two years, and by the end of that time I had become a complete addict of the Far North.

My first paintings were portraits of natives and malemutes. This soon enlarged to include village activities. When, after two years, I took my reluctant farewell, it was to get my affairs in shape for a permanent move to Alaska. With me were three sea chests filled with my impressions of Eskimoland, which I hoped to utilize illustrating books. In no time at all I learned there were no books being done on Alaska. So, at the suggestion of Charles Scribner's Sons, I wrote two juveniles which they then commissioned me to illustrate. Royalties from these enabled me to return to Alaska and subsequently to travel the entire Territory. During these travels I also carried a movie camera and thus enlarged upon recording my visual impressions.

When World War II came, I applied for duty in the Aleutians. Upon discharge after four years, I enrolled in the Art Students League in New York for a course teaching the process of stone lithography. Upon completion of that, it was back to the North Country—this time to do a movie for Encyclopedia Brittanica and, at the same time, to make a lecture movie for my own use. Thus began a period of traveling the "South 48" during the winter lecture season and returning north every third year to gather more subject matter. The lecturing took me to every major city, and whenever my wife Sara (a writer I had met in Alaska) and I arrived for a show, we set aside time to visit the zoo. It was an excellent chance to study anatomy of the various northern species—moose, wolves, coyotes, reindeer, seals, otters, walruses, wolverines, bears (both grizzlies and polar). Having camped and lived over all Alaska, I found it easy to visualize them in their natural habitats.

From the start, the polar bear pits interested us the most. We learned their personalities—tender, fierce, clumsy, lazy. We came to know the lighting of every bear area, the gender of its inhabitants, where the cubs were and which females might be pregnant. From years of observation and study, I came to respect and admire Nanook for what he is. Noblest of creatures in appearance, he is truly the ruler of his realm. He is the most formidable adversary in the Arctic, having been known to track and kill man as well as beast. Despite his overwhelming size, he is agile and fast. He is an amazing swimmer, having been sighted 80 miles from land and ice. He can be the most vicious and aggressive of creatures, yet as a cub is one of the most appealing. The polar bear's natural habitat was a pleasure for me to paint. I was familiar with the almost unlimited spectrum of colors in the ice pack—coldly green, rosy gold from the midnight sun, or proclaiming all the blues in the world.

Another thing governing my choice of subject matter is my painting method. I use the transparent oil techniques of the old masters such as Titian, Vermeer and Rembrandt. In this method, an underpainting is made with green, blue or brown. This is dried, and then the artist applies various layers of different colors (drying and varnishing each one). The effect is that of looking through layers of colored glass. It gives a depth and three-dimensional feeling that no other methods can achieve.

As my paintings became known, we were able to put aside lecturing, and I to do more painting. It's a great feeling to enjoy your work and be able to live where you want at the same time. Everybody should be so lucky.

—Fred Machetanz

Fred Machetanz, 79, was born in Kenton, Ohio, is a graduate of Ohio State University and studied in New York and Chicago. But his artistic career has centered in Alaska, where he and his wife live in a log cabin they built 37 years ago on a lake near Palmer, 45 miles northeast of Anchorage. He has had one-man shows at the University of Alaska, where he has taught painting and received an honorary doctorate in 1973. He also holds honorary doctorates from Alaska Pacific University and Ohio State. Oil painting, entitled "Face to Face," copyright ©1978 by Fred Machetanz. Artwork courtesy of the artist and Mill Pond Press, Venice, FL 33595.

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